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Examining Eudaimonic Well-Being in Sport

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Abstract

The general purpose of this dissertation was to examine eudaimonic well-being in sport. This dissertation was divided into three studies. Study 1 was designed to develop a sport-specific eudaimonic well-being measurement tool (EWBSS; Eudaimonic Well-Being in Sport Scale) and included three phases. During Phase 1, 19 items were created by two investigators and five of these items were selected by five experts to represent eudaimonic well-being in sport. Phase 2 assessed the factorial validity and reliability of the EWBSS on a large sample (N = 400) with competitive level athletes from various individual and team sports with results demonstrating initial evidence for both factorial validity and reliability. Phase 3 further tested the factorial validity, nomological validity, convergent validity, and reliability of the EWBSS with two independent samples (i.e., competitive and recreational athletes). The findings provided support for the psychometric properties of the EWBSS in competitive athletes and partial support for the validity and reliability of the EWBSS in recreational athletes.

The purpose of Study 2 was to investigate the association between motivation and eudaimonic well-being, based on self-determination theory (SDT; Deci & Ryan, 1985). The relationship between motivation and eudaimonic well-being was tested using a latent variable model through Structural Equation Modeling (SEM). Three hundred ninety-nine athletes (M_{age} = 25.08, SD = 7.35) from 15 different individual and team sports completed a questionnaire package. Integrated, identified, and external regulations positively predicted athletes' eudaimonic well-being, while introjected regulation and amotivation negatively predicted athletes' eudaimonic well-being. Additionally, intrinsic motivation was not a significant predictor of eudaimonic well-being.

Study 3 investigated the effectiveness of an imagery intervention on eudaimonic well-being in soccer. Five female varsity level soccer players (M_{age} = 19.80, SD = 1.64) participated in the study. Each athlete engaged in eight individual imagery sessions (i.e., intervention phase) aimed at increasing eudaimonic well-being. Visual and statistical analyses revealed a small increase in eudaimonic well-being for two participants. Post-intervention interviews showed that the imagery intervention was perceived by all participants as beneficial for their well-being at both sport-specific and general levels.

Keywords: eudaimonic well-being, imagery, motivation, self-determination theory, sport, soccer

Co-Authorship Statement

This dissertation is my original work. However, I would like to acknowledge my co-authors on this research. I would like to acknowledge my supervisor Dr. Craig Hall for his contribution to all three of my studies. I would also like to acknowledge Dr. Paige Pope from the University of Lethbridge for her contribution in Study 1 and Study 2, Dr. Alison Divine from Western University for her contribution in Study 2, and Sarah Deck, PhD Candidate in the School of Kinesiology at Western University for her contribution in Study 3.

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Introduction

It is widely accepted that physical activity and participation in sport is linked to various physiological and psychological benefits (e.g., Quested & Duda, 2010; Reinboth, Duda, & Ntoumanis, 2004), including but not limited to health-related behaviors, cognitive development, enhanced self-confidence and self-esteem, high energy and vitality, and lower risk of depression. Sport provides opportunities for athletes to experience psychosocial development, thus promoting optimal functioning (Adie, Duda, & Ntoumanis, 2012). The World Health Organization (WHO) emphasizes the concept of mental health as the foundation of well-being in which individuals realize their potential and increase their optimal functioning (WHO, 2001, p. 1). Despite the positive outcomes, stressors and pressures within the sport environment may affect and contribute to poor mental health such as pressure to achieve success, overtraining, recovering from injury, being separated from the family, facing career transition, anxiety, and performance failure (Bauman, 2016; Hammond, Gialloreto, Kubas, & Davis IV, 2013). In particular, when athletes fail to achieve their goals regarding their performance, they may experience negative affect and depressive symptoms. Based on these mental health challenges, there is evidence supporting that elite athletes experience depression as frequent as non-athletes (Reardon & Factor, 2010). Additionally, athletes tend to avoid disclosing any mental issues, due to the stigma which prevents athletes from asking for help and support (Bauman, 2016).

The present research examined well-being in sport. More specifically, a sport-specific measure of well-being was developed as no such measure existed, the relationship between motivation and well-being was examined, and an imagery intervention was conducted to enhance athletes' well-being. Accordingly, well-being, motivation and imagery are considered below.

Well-Being

Research in different disciplines has articulated that well-being is an ambiguous, complex and difficult construct to define, without a universally accepted definition (Lundqvist, 2011; Mayoh & Jones, 2014; Ryan & Deci, 2001). However, there is a consensus that well-being has been derived from two philosophical views: the hedonic perspective, and the eudaimonic perspective (Ryan & Deci, 2001). The hedonic perspective, initiated from the Greek philosopher Aristippus, maintains that the fundamental goal of life is to achieve the maximum amount of pleasure and happiness (Ryan & Deci, 2001). Based on this, philosophers and psychologists who adopted the hedonic tradition have equated hedonic pleasure with well-being, and have used the term of subjective well-being to assess the construct (Diener, 1984). Specifically, subjective well-being refers to individuals' beliefs and feelings (i.e., cognitive judgments and affective responses) about their own lives and consists of life satisfaction, the presence of positive affect, and the absence of negative affect (Diener, 2009; Diener, Suh, Lucas, & Smith, 1999).

Drawing from Aristotle, the eudaimonic view focuses on eudaimonia, which refers to the highest human good and requires reaching the best that is within us, living a complete human life, and self-realization. Aristotle emphasized functions, processes, and values in order to define well-being (Ryan & Huta, 2009). Eudaimonic theorists posit that living well would lead to pleasure but not all antecedents of pleasure entail eudaimonic living and would not promote well-being (Ryan, Huta, & Deci, 2008). Thus, subjective happiness does not fully conceptualize well-being (Ryan & Huta, 2009).

Eudaimonistic views are at the core of Self-Determination Theory (SDT; Deci & Ryan, 1985; Ryan & Deci, 2000), a theory of full functioning and motivation. SDT proposes that individuals choose their behavior in an attempt to satisfy their basic psychological needs (i.e.,

autonomy, competence, and relatedness) which are the foundations of optimal development, integrity, and well-being (Ryan & Deci, 2000). According to this, the fulfillment of the psychological needs is equally essential and beneficial to all individuals, and the more the individual's basic needs are satisfied, the more one's levels of self-determined motivation may increase (e.g., intrinsic motivation), leading to enhanced well-being and healthy human functioning (Ryan & Deci, 2000), whereas need thwarting diminishes well-being (Bartholomew Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011). In other words, psychological need satisfaction predicts optimal, thriving functioning (Ryan, Curren, & Deci, 2013).

Ryff and colleagues (Ryff, 1989, 2013, 2014; Ryff & Keyes, 1995; Ryff & Singer, 2008) presented a multidimensional model of well-being based on philosophical underpinnings of eudaimonia and conceptual links of existential, humanistic, developmental, and clinical psychology regarding positive functioning. In particular they identified six distinct components to describe well-being, which were: self-acceptance (i.e., awareness and acceptance of both personal strengths and limitations), positive relations with others (i.e., having quality interpersonal relationships with significant others), autonomy (i.e., a sense of self-determination, independence, and regulation of behavior), environmental mastery (i.e., the capacity of effectively managing life situations), purpose in life (i.e., beliefs and goals asserting that life is meaningful), and personal growth (i.e., a sense of continued development of one's potential).

Individual's well-being is influenced by different life domains (e.g., work, family). In a review regarding work settings, the specific life context was indicated to be critical for individual's perceived overall well-being (Page & Vella-Brodrick, 2009). Thus, context-specific well-being measures targeting specific life domains may provide more detailed and precise information for individual's well-being (Daniels, 2000). In the sport literature, the majority of

studies have failed to distinguish between general well-being and well-being specific to the sport context despite the established relationship between sport participation and well-being (for a review see Lundqvist, 2011). The life of an athlete, especially elite athletes, can be characterized as highly demanding, challenging, and stressful. The high dedication to the sport with long hours of training despite illness, pain, or injuries, nutrition restrictions, and limited personal and social life, may lead athletes to experience difficult sport experiences and diminished well-being (Theberge, 2008). Given that different factors may influence well-being in sport context compared to well-being in general level, assessing sport-specific well-being is warranted.

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) and the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) are two global measures of subjective well-being that have been employed with athletes (e.g., Felton & Jowett, 2015; Golby & Wood, 2016; Kipp & Weiss, 2015; Lu & Hsu, 2013; Lundqvist & Raglin, 2015). A few studies have used the Scales of Psychological Well-Being (SPWB; Ryff, 1989) to assess athletes' eudaimonic well-being but this is again a global measure. For example, Lundqvist and Raglin (2015) used the 18-item version of SPWB to examine the effects of basic need satisfaction, motivational climate, and personality on elite active orienteers' well-being. Additionally, Ferguson, Kowalski, Mack, and Sabiston (2014) explored self-compassion and well-being in young women athletes by employing the 84-item version of the SPWB, and Baltzell and Akhtar (2014) investigated the effectiveness of a mindful meditation training intervention on well-being of women soccer players by assessing the 54-item version of the SPWB. The Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) has been broadly used in sport psychology studies to measure subjective vitality as an indicator of athletes' eudaimonic well-being (e.g., Adie, Duda, & Ntoumanis, 2008; Adie et al., 2012; Mack et al., 2011; Reinboth

& Duda, 2006, 2016). Despite the fact that SVS is a valid measure, it only captures one aspect of the eudaimonic viewpoint. The lack of an instrument for assessing athletes' well-being in the sport context has been highlighted (Galloway, Bell, Hamilton, & Scullion, 2006; Lundqvist, 2011). Lundqvist (2011) has underlined the importance of developing a sport-specific well-being instrument in examining how the competitive environment influences athletes' well-being. Based on this, a sport-specific well-being measure might be valuable in better understanding athletes' well-being by examining potential relationships with other variables that either enhance or diminish well-being.

Motivation

Self-Determination Theory (SDT; Deci & Ryan, 1985) represents a conceptual framework of human motivation that has been used in the sport context to explain athletes' behavior and predict well-being (see Hagger & Chatzisarantis, 2007). Motivation may be a valuable construct in understanding what influences well-being within the sport context. A variety of reasons may explain why an athlete participates in sport and these reasons differ in the extent to which they are found within the individual. Athletes are intrinsically motivated (e.g., interest, enjoyment) for various aspects of their sport, leading to positive overall experiences (e.g., positive affect, vitality, better performance, sustained involvement; Ryan & Deci, 2017). However, extrinsic reasons (e.g., financial rewards, fame, controlling coaching climate, competitive pressure) can add to the motivational dynamics of sport participation, leading to maladaptive outcomes (e.g., burnout, dropout, negative affect; Ryan & Deci, 2017). The existence of a continuum of motivation has been proposed by Deci and Ryan which contains self-determined (i.e., autonomous) types of motivation, non self-determined (i.e., controlled) types of motivation, and amotivation. Intrinsic motivation as the most autonomous or self-

determined form of motivation, lies on the one end of the continuum and refers to participation in an activity by an individual for its own sake (Ryan & Deci, 2000). For instance, an intrinsically motivated athlete experiences interest and enjoyment derived from participating in sport. At the other end of the continuum, amotivation refers to lack of motivation and is characterized by lack of intention to engage in a behavior (Ryan & Deci, 2000). An athlete who lacks a sense of intention to take part in sport and questions his/her continued participation, is considered to lack self-determination.

Extrinsic motivation lies between amotivation and intrinsic motivation and is represented by four types of regulation: external regulation, introjected regulation, identified regulation, and integrated regulation (Ryan & Deci, 2000). External regulation is the least self-determined form of motivation and occurs when individuals are motivated by external factors. Athletes are externally motivated when they participate in sport to receive prize money, win a trophy or a medal, or to avoid punishment or negative evaluation. There is also evidence indicating that offering rewards does not always diminish intrinsic motivation (see Ryan & Deci, 2017). Specifically, there are circumstances where financial rewards (e.g., athletic scholarships) may be perceived as signs of competence by the athletes due to the informational functional significance of the rewards, and therefore leading to enhanced intrinsic motivation (Medic, Mack, Wilson, & Starkes, 2007). With respect to introjected regulation, individuals have somewhat internalized the external reason for the activity and they are motivated because they feel they should take part in an activity to avoid guilt or anxiety, or to maintain the feeling of worth (Ryan & Deci, 2000). For example, when athletes try to prove their abilities or try to avoid personal failure because they desire to maintain self-esteem they show introjected regulation. While external and introjected regulations represent the controlled types of extrinsic motivation, identified and

integrated regulations are considered to be the autonomous types of extrinsic motivation as the behavior is initiated out of choice (but it is not necessarily perceived to be enjoyable). Identified regulation typifies engagement in a behavior because it is highly valued and the regulation of the behavior is more internalized and accepted (Ryan & Deci, 2000). An example in sport is when an athlete engages in sport due to personal importance. Finally, integrated regulation, which is the most self-determined type of extrinsic motivation, occurs when an athlete's motivation has been incorporated within the self (Ryan & Deci, 2000). For instance, athletes may participate in sport because it is part of who they are.

Depending on the extent to which the reason for the behavior is internal, the individual will feel more or less autonomous in self-regulating his or her own behavior. According to the tenets of SDT, autonomous types of motivation are expected to be linked to positive psychological outcomes (e.g., persistence, well-being), whereas controlled types of motivation are expected to be associated with maladaptive outcomes (e.g., anxiety [Ryan & Deci, 2002; Vallerand, 2007]). In the sport literature, studies have tested and supported these relationships. For instance, research has demonstrated that athletes' autonomous motivation is related to positive emotions and satisfaction with sport, flow, and enhanced performance (Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009; Kowal & Fortier, 1999; Pope & Wilson, 2014). In other studies, controlled motivation has been linked to negative affect, burnout, and dropout in athletes (Lonsdale & Hodge, 2011; Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008; Pelletier, Fortier, Vallerand, & Brière, 2001).

Considering the importance of promotion and protection of well-being in the sport context, numerous studies have examined the relationship between motivation and indicators of well-being (see Ntoumanis, 2012). While in many studies complex models have been tested,

researchers have used a single score of self-determination, labeled the Self-Determination Index (SDI; Vallerand, 2007) or Relative Autonomy Index (RAI; Ryan & Connell, 1989) in which all the motivational subscales are combined into one latent motivation variable. These studies have revealed that high self-determination is a positive predictor for subjective and eudaimonic well-being (e.g., Blanchard et al., 2009; Stenling, Lindwall, & Hassmén, 2015). Although researchers have tended to use the SDI, limitations have been noted regarding its use because motivation is a multidimensional construct (Chemolli & Gagné, 2014).

Imagery in Sport

There is consensus that imagery is one of the most popular and widely researched psychological techniques/skills employed in the sport context (see Munroe-Chandler & Morris, 2011). Imagery is a polysensory experience and involves creating or re-creating an experience in the mind (Vealey & Greenleaf, 2010). Many definitions exist for imagery. Morris, Spittle, and Watt (2005) described sport imagery "as the creation or re-creation of an experience generated from memorial information, involving quasi-sensorial, quasi perceptual, and quasi-affective characteristics, that is under the volitional control of the imager, and which may occur in the absence of real stimulus antecedents normally associated with the actual experience" (p. 19). Given imagery is a multisensory construct, athletes have the capacity to incorporate all relevant modalities (i.e., visual, auditory, olfactory, gustatory, tactile, and kinesthetic) when practicing imagery. The more senses that are used, the more vivid the image, leading to a more effective imagery experience (Moran, 2013; Vealey & Greenleaf, 2010).

Athletes use imagery for various functions, divided into two general categories; cognitive and motivational (Paivio, 1985). Based on Paivio's framework, Hall, Mack, Paivio, and Hausenblas (1998) described five functions of imagery use: cognitive specific (CS; sport-specific

skills), cognitive general (CG; sport strategies, game plans, and routines), motivational specific (MS; individual goals), motivational general-arousal (MG-A; regulating arousal and emotions), and motivational general-mastery (MG-M; confidence, mental toughness, and focus). In the sport literature, the effectiveness of these functions has been examined by conducting imagery interventions in a variety of sports, and with players of various skill levels (Munroe-Chandler & Morris, 2011). Specifically, imagery interventions have demonstrated positive effects on sports performance, as well as athletes' self-confidence, self-efficacy, emotion regulation, and flow (e.g., Callow, Hardy, & Hall, 2001; Jones, Mace, Bray, MacRae, & Stockbridge, 2002; Koehn, Morris, & Watt, 2014; Mellalieu, Hanton, & Thomas, 2009; Munroe-Chandler, Hall, Fishburne, Murphy, & Hall, 2012).

Although research has investigated the impact of imagery use on various psychological outcomes, there have been no interventions examining the effectiveness of an imagery-based intervention on athletes' well-being. However, imagery has been combined with other psychological skills (e.g., relaxation and self-talk) to examine the effectiveness of psychological skill training (PST) programs on indicators of athletes' subjective and eudaimonic well-being. For instance, Sheard and Golby (2006) and Golby and Wood (2016) have found an increase in swimmers and rowers' positive affect following a PST program in which imagery use was included. Edwards and Steyn (2008) also implemented a PST program with track and field athletes and found a positive effect on eudaimonic well-being. It should be noted that these studies failed to assess well-being with a sport-specific measure. While imagery has been used as an integral part of PST programs, it is important to explicitly investigate the effectiveness of this mental tool for enhancing athletes' eudaimonic well-being given its potential to enhance

psychological development and health, promote optimal functioning, and boost confidence and performance.

Overview of the Present Research

The overall purpose of this dissertation was to develop and validate a eudaimonic well-being instrument in the sport context, investigate the relationship between motivation and athletes' eudaimonic well-being, and examine the effectiveness of an imagery intervention specifically designed to enhance the eudaimonic well-being of varsity soccer players. Soccer was chosen as it is an internationally recognized sport in which it is highly important for players to be mentally prepared in order to achieve optimal performance and positive psychological outcomes (Beswick, 2001). Three studies were conducted and are included in the present dissertation. The purpose of Study 1 was to create and validate a sport-specific eudaimonic well-being measure labeled the Eudaimonic Well-Being in Sport Scale (EWBSS). The EWBSS was developed over three phases. In Phase 1, an initial pool of 19 items was created and five items were selected by five experts to represent eudaimonic well-being in sport. Phase 2 was conducted to test the factorial validity and reliability of the EWBSS on a large sample (N = 400) with competitive level athletes. In Phase 3, further psychometric testing (i.e., factorial validity, nomological validity, convergent validity, and reliability) of the EWBSS with two independent samples (competitive and recreational athletes) was undertaken.

The purpose of Study 2 was to investigate the relationship between motivation and athletes' eudaimonic well-being, as measured by the EWBSS, based on SDT framework (Deci & Ryan, 1985). Specifically, all the types of motivation were considered individually to examine how they separately influence eudaimonic well-being. Study 3 examined the effectiveness of an imagery intervention on eudaimonic well-being (assessed by the EWBSS) of varsity soccer

players using a single-subject multiple baseline design with each athlete engaging in eight individual imagery sessions (i.e., intervention phase).

The three studies presented in this dissertation follow an integrated-article format. Based on this format, redundancy exists between the content of the general introduction and the three studies.

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Study 1

Measuring Eudaimonic Well-Being in Sport: Validation of the Eudaimonic Well-Being in Sport Scale (EWBSS)[1]

Within the literature, mental well-being has been viewed and used interchangeably with various terms such as quality of life, happiness, life satisfaction, vitality, and self-esteem (e.g., Kahn & Juster, 2002; Verkooijen, van Hove, & Dik, 2012). The extensive usage of different labels, as well as the lack of consensus about the meaning of the construct, has led to conceptual confusion (Lundqvist, 2011; Mayoh & Jones, 2014; Ryan & Deci, 2001).

Philosophical and Theoretical Foundations of Well-Being

It is widely accepted that well-being has been derived from two distinct philosophical traditions: the hedonic view, which focuses on the pursuit of pleasure and pain avoidance, and the eudaimonic view, which focuses on living a meaningful life and self-realization (Ryan & Deci, 2001). While the hedonic perspective targets specific outcomes, the eudaimonic perspective targets the content of an individual's life together with the processes of a life well-lived (Ryan, Huta, & Deci, 2008).

Based on the hedonic approach, well-being refers to maximizing pleasure and minimizing pain in order to achieve human happiness and is assessed through *subjective well-being* (SWB; Diener, 1984). SWB incorporates both cognitive (i.e., life satisfaction) and affective (presence of positive affect and absence of negative affect, summarized as happiness) components (Diener, 2009; Diener, Suh, Lucas, & Smith, 1999). Initiating from Aristotle's philosophy, the

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[1] A version of this study has been submitted to the *European Journal of Sport Science* and is currently under review.

eudaimonic approach emphasizes living well and reaching human potential and defines well-being in terms of the level to which an individual is fully functioning (Ryan & Deci, 2001; Ryan & Huta, 2009). Although eudaimonic living contributes to SWB, experiencing pleasure does not always promote wellness (Ryan & Deci, 2001; Ryan et al., 2008).

In 1993, the first empirical research in distinguishing hedonia and eudaimonia appeared by Waternman. Aligned with contemporary eudaimonist philosophers, he developed eudaimonic identity theory in which eudaimonia is explained as a set of subjective experiences with the individual pursuing self-realization accompanied by feelings of personal effectiveness. A few years later, Ryan and Deci (2001), the originators of Self-Determination Theory (SDT; Deci & Ryan, 1985a; Ryan & Deci, 2000) introduced the term of *eudaimonic well-being* (EWB) in a review regarding the two traditions and defined it as a construct that refers to optimal experience and psychological functioning. SDT, as a theory about human motivation and personality, was developed by incorporating aspects from Aristotle's views about eudaimonia (Ryan et al., 2008). Ryan and colleagues, described eudaimonia as living well with specific characteristics: pursuing intrinsic goals, behaving autonomously, being mindful, and satisfying basic psychological needs (i.e., autonomy, competence, and relatedness). Based on this view, EWB is portrayed as an outcome of eudaimonic living. Accordingly, for optimal well-being, the fulfillment of the basic psychological needs of autonomy (i.e., sense of volition and choice), competence (i.e., sense of efficacy), and relatedness (i.e., sense of closeness) is required. Specifically, when the psychological needs are completely satisfied, an individual's motivation is self-determined, resulting in enhanced well-being (e.g., high subjective vitality, growth; Ryan & Deci, 2000). In contrast, when the needs are thwarted, well-being is diminished (e.g., low subjective vitality, impaired functioning; Bartholomew, Ntoumanis, Ryan, & Thogersen-Ntoumani, 2011).

SDT researchers have used a diverse set of wellness elements to operationalize EWB (Ryan & Deci, 2000, 2001). For example, the General Causality Orientation Scale (Deci & Ryan, 1985b) has been used to assess motivational (i.e., autonomous) orientations, the Aspiration Index (Kasser & Ryan, 1993) to measure intrinsic goals or aspirations (i.e., relationships, personal growth, and community contributions); the Subjective Vitality Scale (Ryan & Frederick, 1997) to assess the degree to which an individual feels vital, energized, and alive; the Mindful Attention and Awareness Scale (Brown & Ryan, 2003) has been used to measure awareness of and attention to what is occurring at the moment; and the Basic Psychological Needs Scale (Gagné, 2003) to assess the extent to which a person feels satisfied by the need for autonomy, competence, and relatedness. The use of multiple scales by researchers is problematic as it adds burden to participants due to the sheer number of items, and there is potential of overlap in the operationalization of the dimensions included.

Drawing also from underpinnings of eudaimonia combined with conceptual links of developmental, clinical, existential and humanistic psychology, Ryff and colleagues (Ryff, 1989, 2013, 2014, 2017; Ryff & Keyes, 1995; Ryff & Singer, 2008) presented a multifaceted model of EWB which refers to optimal functioning and realization of human potential. Six key components were identified to define and operationalize *psychological well-being*[2]: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. To measure these constructs, the Scales of Psychological Well-Being was developed (SPWB; Ryff, 1989).

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[2] The label of EWB is used interchangeably with the label of psychological well-being (PWB) by Ryff and colleagues.

Well-Being in Sport

Well-being has been examined in various domains such as developmental and clinical psychology, biology, and neuroscience (for a review see Ryff, 2014). Research in sport has underlined that sport engagement is associated with optimal levels of well-being and other positive outcomes (e.g., Quested & Duda, 2010; Verner-Filion, Vallerand, Amiot, & Mocanu, 2017). However, negative experiences in sport may also occur with athletes often facing challenges and obstacles which have a detrimental influence on their physical and psychosocial health, and diminishing their well-being (Bartholomew et al., 2011). According to this, specific factors in the sport environment may impact athletes' well-being (Lundqvist, 2011; Lundqvist & Sandin, 2014). Several studies examining well-being in athletes have either neglected providing a definition of the construct, used different labels to describe the construct resulting in conceptual ambiguity, or failed to distinguish between general well-being and well-being specific to the sport context (for a review see Lundqvist, 2011). Moreover, limited research has examined how general well-being and sport-specific well-being are related (e.g., Lundqvist & Sandin, 2014). Lundqvist and Sandin (2014) using a qualitative research approach, examined SWB, EWB, and social well-being at both general and sport-specific levels among elite orienteers. Results revealed the importance considering well-being at both levels, as well as that general well-being was viewed as a protective factor for sport-specific well-being.

Global measurement tools that have been used to assess SWB in athletes (e.g., Felton & Jowett, 2015; Golby & Wood, 2016; Kipp & Weiss, 2015; Lu & Hsu, 2013; Lundqvist & Raglin, 2015) are the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) and the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), which primarily address hedonic well-being. In regards to the eudaimonic approach, the Scales

of Psychological Well-Being (SPWB; Ryff, 1989) has been employed with athletes to assess EWB on a global level (e.g., Baltzell & Akhtar, 2014; Ferguson, Kowalski, Mack, & Sabiston, 2014; Lundqvist & Raglin, 2015). The Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) is another EWB measurement tool that has been utilized to assess athletes' subjective vitality, a perceived dimension of well-being. Although many studies have employed SVS, it does not incorporate all the components of EWB (e.g., Adie, Duda, & Ntoumanis, 2012; Mack et al., 2011; Reinboth & Duda, 2006, 2016). As a result, the lack of an instrument for measuring athletes' well-being in the sport context has been noted as a caveat in the literature (Lundqvist, 2011; Lundqvist & Sandin, 2014).

The Present Study

Considering the gap within the literature in measuring well-being in sport, the purpose of the present study was to create and validate a sport-specific EWB measure. Our instrument was grounded in SDT and influenced also by three dimensions (purpose in life, personal growth, and self-acceptance) of Ryff's (1989) multidimensional model of EWB. Both approaches notably overlap as they align with the contemporary eudaimonic psychological theories of well-being (Lambert, Passmore, & Holder, 2015). More specifically, having a meaningful and purposeful life, actualizing potentials, and being fully functioning are hallmarks of eudaimonia on which the items of the instrument were based to operationalize EWB (Ryan & Deci, 2000). In terms of the dimensions of autonomy, environmental mastery, and positive relations in Ryff's model, they exhibit similarities with the basic psychological needs. Ryff uses them to help define well-being, whereas SDT posits that these factors foster well-being (Ryan & Deci, 2001). Accordingly, none of the items were created based on these three dimensions.

Phase 1

The purpose of Phase 1 was to create a pool of items that might best represent EWB in sport. While Ryff (1989) has conceptualized EWB as multidimensional, some researchers have not found support for her conceptualization (e.g., Springer, Hauser, & Freese, 2006). Moreover, recent work by Kouali, Hall, and Pope (2017) indicated that EWB in sport is likely best represented as a unidimensional component. Based on this, the items were created to measure EWB in sport as a single construct (i.e., one factor) capturing its three main aspects.

Method

Participants. A panel of five experts ($n_{males} = 3$, $n_{females} = 2$) participated in the study. All participants were academic researchers who had published articles related to SDT and EWB within the sport context and were currently conducting research on either/both areas.

Procedure. Ethical approval was granted by the institutional research ethics board. First, two investigators assessed the technical qualities (i.e., length, readability, and clarity) and the item-content validity (i.e., the extent to which the content of each item is relevant to measure the construct; Lynn, 1986) of a pool of 19 items. After finalizing the items by making alterations (i.e., rewording and deleting phrases from items), the investigators contacted five experts via email to determine their willingness and availability to participate in the study. All experts agreed to provide their feedback on the set of items. Each expert first read the definition of the construct and then selected the items that best represent EWB in sport. A comment box was also provided so the experts could explain any of their answers or make any comments. The panel of experts sent back their answers in a document that was attached in the email invitation.

Results and Discussion

Based on the percentage of consensus among experts' responses, each item was retained or removed from the item list. Of the 19 items, 80% agreement was found for five items, 60% for four items, 40% for five items, and 20% for three items. Also, two items were not selected by any expert. Generally, there are basic guidelines that researchers should follow regarding the items that identify a construct (DeVellis, 2012). DeVellis suggested that the initial pool of items should be three or four times larger than the number of items that will be included in the final scale. Each item should be simple, parsimonious, clearly phrased, and concise, while double or triple barreled, negatively worded or reversed score items should be avoided (Hinkin, Tracey, & Enz, 1997; Sauro & Lewis, 2011). In terms of the appropriate number of items that should represent a scale, a minimum of three items is desirable for a multidimensional construct (Raubenheimer, 2004). Costello and Osborne (2005) suggested that five or more items should indicate a solid factor, whereas Hinkin et al. and Raubenheimer recommended four to six items for the development of a quality scale. Furthermore, when a scale is short it helps to reduce the burden on respondents compared to a longer scale (DeVellis, 2012). Therefore, the five items with the highest level of agreement (80%) were retained to represent EWB in sport (Table 1)

Table 1

Items Comprising the Eudaimonic Well-Being in Sport Scale From Phase 1

Item
As an athlete, I feel that I continue to learn more about myself.
I have a sense of direction in sport.
My goals in sport have been a source of satisfaction.
In general, I feel positive about myself as an athlete.
I like most aspects of myself as an athlete.

as one factor, termed the Eudaimonic Well-Being in Sport Scale (EWBSS) and to be further examined in the next phase (Phase 2).

Phase 2

The purpose of Phase 2 was to test the EWBSS by examining the factorial validity and reliability of the instrument.

Method

Participants. Four hundred (n_{males} = 299; $n_{females}$ = 101) competitive athletes (M_{age} = 24.32, *SD* = 6.69) from 25 different team and individual sports participated in the study. The sports included soccer (*n* = 188), volleyball (*n* = 52), track and field (*n* = 51), basketball (*n* = 30), running (*n* = 23), futsal (*n* = 10), swimming (*n* = 10), dance (*n* = 7), golf (*n* = 6), triathlon (*n* = 3), waterskiing, (*n* = 3), cycling (*n* = 2), karate (*n* = 2), tennis (*n* = 2), biathlon (*n* = 1), kickboxing (*n* = 1), weightlifting (*n* = 1), rugby (*n* = 1), ringette (*n* = 1), wrestling (*n* = 1), lacrosse (*n* = 1), football (*n* = 1), baseball (*n* = 1), rowing (*n* = 1), and equestrian (*n* = 1). Athletes played at varsity (*n* = 34), regional (*n* = 20), provincial (*n* = 293), national (*n* = 23), and international (*n* = 20) levels. On average, the athletes practiced 11.54 hours per week (*SD* = 4.07) and had been participating in their sport for 12.16 years (*SD* = 5.71). Participants reported that they were at the pre-season stage (*n* = 269), early season stage (*n* = 46), middle season stage (*n* = 22), late season stage (*n* = 12), and off-season stage (*n* = 51), while 97% indicated currently having a coach. In terms of athletes' ethnicity, they described themselves as Caucasian (*n* = 364), African American (*n* = 9), Hispanic (*n* = 7), Asian (*n* = 4), and other (*n* = 16).

Measures. ***Demographics.*** The demographic questionnaire included information about age, gender, ethnicity, major sport, years of participation in respective sport, hours practiced per

week, competitive level, stage of competitive season of major sport, and if they currently had a coach or not.

Eudaimonic well-being. The Eudaimonic Well-Being in Sport Scale (EWBSS) was used to measure athletes' well-being. The EWBSS consists of five items (e.g., "As an athlete, I feel that I continue to learn more about myself"; see Table 1). Athletes were asked to circle the number that best describes their present agreement or disagreement with each item using a six-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).

Procedure. Once approval was granted by the institutional research ethics board, one of the investigators identified coaches' contact information via official websites of varsity teams and contacted them via email in order to receive permission to contact the athletes. After receiving permission from coaches to approach the athletes, the investigator contacted the athletes before or after their practice, explaining to them briefly the purpose of the study and providing them a letter of information. The athletes who agreed to participate, completed the corresponding paper and pencil questionnaire (without the presence of the coaches). Alternatively, the investigator identified communications coordinators' contact information of sporting associations via their publicly available website and asked them via email to post a short description of the study and the questionnaire link on their website for athletes to access. Accordingly, the interested participants completed the survey online. The questionnaire took approximately 10 minutes to complete. Completion of the questionnaire indicated athletes' consent to participate.

Data analysis. After screening the data for outliers, missing and incomplete data, the factorial validity of the EWBSS was examined with confirmatory factor analysis (CFA) using AMOS 24.0 software (Arbuckle, 2016). The goodness-of-fit of the hypothesized model was

tested using four indices suggested by Kline (2005): the chi-square statistic (χ^2), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean residual (SRMR). The χ^2 statistic is sensitive to sample size and must be interpreted with caution (Kelloway, 1998). Hu and Bentler (1999) for CFI recommended that values above .95 indicate an excellent fit, while more recently Marsh, Hau, and Wen (2004) suggested that values greater than .90 indicate a good fit. Additionally, RMSEA values equal or less than .06 are desired, while SRMR values less than .08 denote acceptable fit (Hu & Bentler, 1999). Cronbach alpha coefficient was also calculated for the EWBSS.

Results and Discussion

The CFA model with the five items representing the EWBSS revealed an excellent fit to the data (χ^2 (5) = 7.55, p = .18; *CFI* = .99; *RMSEA* = .04; *SRMR* = .02). Additionally, the scale showed acceptable internal consistency (α = .74). Therefore, initial support for the factorial validity and reliability of the EWBSS was provided when it was tested on a large sample with competitive level athletes. However, further validation of the five items was needed.

Phase 3

The purpose of this phase was to further test the psychometric properties of the EWBSS. Accordingly, factorial validity, nomological validity, convergent validity, and reliability of EWBSS were evaluated with two independent samples, competitive athletes and recreational athletes. While it is widely accepted that physical activity and sport participation is associated with psychological benefits including enhanced well-being (e.g., Adie et al., 2012), there is evidence showing that there are differences in well-being between the various levels of the competitors (e.g., Eime, Young, Harvey, Charity, & Rayne, 2013). For example, Chatzisarantis and Hagger (2007) examined the effect of recreational and competitive sport participation on the

well-being of UK athletes and found that recreational athletes reported higher levels of both SWB and EWB compared with competitive athletes. In another study with Australian women (Eime, Harvey, Brown, & Payne, 2010), club sport participants demonstrated higher levels of SWB than participants engaging in gym activities or walking. While the EWBSS was designed to be suitable for any sport level, in the present phase competitive athletes and recreational athletes were examined separately to determine if the EWBSS was equally appropriate for both groups.

The nomological and convergent validity were examined in relation to constructs of SDT. Following Lonsdale, Hodge, and Rose's (2008) approach providing evidence regarding the nomological validity of the Behavioral Regulation in Sport Questionnaire (BRSQ) with elite and non-elite athletes, nomological validity was measured in relation to the six types of motivation based on SDT (Ryan & Deci, 2000). The SDT framework postulates that different types of motivation lie on a continuum relative to self-determination and internalization (Ryan & Deci, 2000). Specifically, intrinsic motivation (participation in an activity by an individual for its own sake), integrated regulation (engagement in a behavior because it is an important part of individual's identity), and identified regulation (engagement in a behavior because it is highly valued) are characterized as the autonomous types of motivation, while introjected regulation (engaging in an activity in order to avoid guilt or anxiety or to maintain the feeling of worth), external regulation (the desire to obtain an award, social recognition, or avoid punishment) are characterized as the controlled types of motivation, and amotivation is a lack of intention to engage in a behavior (Ryan & Deci, 2000). Accordingly, SDT posits that autonomous types of motivation are positively associated with EWB, whereas controlled types of motivation and amotivation are negatively associated with EWB (Ryan & Deci, 2000). To evaluate convergent

validity, the association between EWBSS and SVS was tested. SVS has been broadly used in sport psychology studies (e.g., Mack et al., 2011) to measure subjective vitality as a dynamic aspect of EWB, as well as an outcome of eudaimonic living (Ryan et al., 2008).

It was hypothesized that a) evidence of the factorial validity and reliability of EWBSS would be provided, b) autonomous types of motivation (i.e., intrinsic motivation, integrated regulation, and identified regulation) would be positively related to EWBSS, while controlled types of motivation (i.e., introjected regulation and external regulation) and amotivation would be negatively related to EWBSS (nomological validity), and c) EWBSS would be strongly correlated with SVS (convergent validity).

Method

Participants. The two samples consisted of 139 (n_{males} = 46; $n_{females}$ = 93) competitive athletes (M_{age} = 19.76, *SD* = 1.44) from 21 individual and team sports (35.3% indicated engaging in track and field), and 104 (n_{males} = 48; $n_{females}$ = 56) recreational athletes (M_{age} = 20.46, *SD* = 2.43) from 22 individual and team sports (25% indicated playing soccer). The majority of the competitive athletes played at varsity level (*n* = 108) and were at the early season stage (*n* = 79), whereas the majority of recreational athletes were at the off-season stage (*n* = 40). On average, the competitive athletes practiced 12.06 hours (*SD* = 4.89) per week and had been participating in their sport for 9.64 years (*SD* = 4.91). The recreational athletes practiced less hours per week (*M* = 5.13, *SD* = 3.29) and reported that they had been participating in their sport on average for 9.74 years (*SD* = 4.56). Most of the participants from both samples described themselves as Caucasian ($n_{competitive}$ = 123; $n_{recreational}$ = 70). Additionally, 97.5% of competitive athletes and only 32.7% of recreational athletes indicated currently having a coach/instructor.

Measures. ***Demographics.*** The same demographic questionnaire used in Phase 2 was employed.

Eudaimonic well-being. The EWBSS was used to measure athletes' well-being as in Phase 2.

Motivation. The Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale et al., 2008) was used to assess athletes' motivation by indicating the reasons they participate in their sport and responding on a seven-point Likert scale from 1 (*not at all true*) to 7 (*very true*). The 24-item questionnaire includes six subscales: intrinsic motivation (e.g., "because it's fun"), integrated regulation (e.g., "because it's an opportunity to just be who I am"), identified regulation (e.g., "because I value the benefits of my sport"), introjected regulation (e.g., "because I would feel guilty if I quit"), external regulation (e.g., "in order to satisfy people who want me to play"), and amotivation (e.g., "but I question why I continue"). Supportive evidence regarding the reliability (alpha coefficients exceeded .78) and factorial validity (χ^2 (343) = 385.44, $p < .01$; *CFI* = .99; *TLI* = .99; *RMSEA* = .04) of the BRSQ has been reported in four studies conducted by Lonsdale and colleagues (2008) and the BRSQ has been effectively employed in a number of studies (e.g., Lonsdale & Hodge, 2011; Lonsdale, Hodge, & Rose, 2009).

Subjective vitality. The six-item version of Subjective Vitality Scale (SVS; Ryan & Frederick, 1997) was used to assess the degree to which participants feel vital, energized, and alive in their life as athletes. The items (e.g., "I feel alive and vital") are answered on a seven-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). The reliability and validity of the scale has been supported by previous research (e.g., Bostic, Rubio, & Hood, 2000).

Procedure. Approval for the study was granted by the institutional research ethics board. After contacting teaching instructors of university kinesiology courses via email, one of the investigators contacted students (at the end of the class) explaining to them briefly the purpose of the study. A letter of information and the questionnaire were then administered to them using a paper and pencil format which took approximately 15 minutes to complete. By completing the questionnaire implicit consent was obtained to participate in the study. The instructors were not present during class recruitment and data collection. The completed questionnaires were placed in enveloped that were sealed before departing the classroom.

Data analysis. Descriptive statistics and Cronbach alpha coefficient scores of both samples' responses were calculated for all the examined variables. Similar to Phase 2, the factorial validity of the EWBSS scores for each sample was examined with CFA, and the goodness-of-fit of the hypothesized model was tested using the same indices (χ^2, CFI, RMSEA, and SRMR). Bivariate correlations (Pearson correlation) were also computed to test patterns of association between the constructs.

Results

Descriptive statistics, scale reliabilities, and CFA. The descriptive statistics and Cronbach alpha coefficient scores of competitive and recreational athletes' responses for all variables are presented in Table 2 and Table 3. On average, both competitive and recreational athletes scored above the midpoint for the EWBSS, SVS, and autonomous types of motivation subscales. Participants' responses from both samples were on average below the midpoint for the non-autonomous types of motivation subscales. All the examined variables had acceptable levels of internal consistency with alphas ranging from .76 to .90 with the exception of the identified regulation subscale for the recreational athletes which indicated a poor level of

reliability (α = .59). While the results for this variable are reported, the findings that include identified regulation for recreational athletes must be interpreted with caution.

For the sample with competitive athletes, fit index scores reflected adequate fit with the exception of RMSEA which did not reach the cutoff criterion (χ^2 (5) = 27.21, p = .00; *CFI* = .90; *RMSEA* = .18; *SRMR* = .06). For the sample with recreational athletes, the CFA model representing the EWBSS revealed a much poorer fit to the data (χ^2 (5) = 27.28, p = .00; *CFI* = .88; *RMSEA* = .21; *SRMR* = .08).

Nomological and convergent validity. The bivariate correlations between all the variables are also presented in Table 2 and Table 3. Competitive and recreational athletes' autonomous types of motivation were positively associated with EWB. Negative relationships were found between the controlled types of motivation (including amotivation) and EWB in competitive athletes, whereas only amotivation was found to be negatively associated with EWB in recreational athletes. Positive correlations were found between EWBSS scores and SVS scores of both competitive and recreational athletes.

Discussion

The results from this phase provided further evidence supporting the factorial validity of the EWBSS, but primarily for competitive athletes. Support was provided for the nomological validity of the EWBSS with competitive athletes, but only partial support for nomological validity was found with recreational athletes as introjected regulation and external regulation were non-significantly correlated with the EWBSS. As was expected, EWB as assessed by the EWBSS was significantly related to subjective vitality, which provided support for the

Table 2

Descriptive Statistics, Reliability Coefficients, and Bivariate Correlations between Study Variables for Competitive Athletes from Phase 3

Variables	*M*	*SD*	Scale Range	α	1	2	3	4	5	6	7	8
1. Intrinsic Motivation	6.13	0.92	1-7	.90	-							
2. Integrated Regulation	5.60	1.08	1-7	.81	.59**	-						
3. Identified Regulation	5.94	0.90	1-7	.76	.49**	.61**	-					
4. Introjected Regulation	3.43	1.64	1-7	.88	-.25**	-.04	-.10	-				
5. External Regulation	2.45	1.32	1-7	.86	-.23**	-.10	-.12	.60**	-			
6. Amotivation	2.35	1.28	1-7	.86	-.50**	-.30**	-.26**	.54**	.56**	-		
7. Subjective Vitality	4.85	1.05	1-7	.85	.44**	.45**	.32**	-.15	-.08	-.23**	-	
8. Eudaimonic Well-Being	5.19	0.64	1-6	.81	.49**	.45**	.45**	-.34**	-.31**	-.44**	.59**	-

Note. *M* = Mean; *SD* = Standard Deviation; α = Cronbach alpha coefficient; ** $p < .01$.

Table 3

Descriptive Statistics, Reliability Coefficients, and Bivariate Correlations between Study Variables for Recreational Athletes from Phase 3

Variables	*M*	*SD*	Scale Range	α	1	2	3	4	5	6	7	8
1.Intrinsic Motivation	6.50	0.65	1-7	.78	-							
2. Integrated Regulation	5.33	1.10	1-7	.80	.46**	-						
3. Identified Regulation	5.72	0.85	1-7	.59	.36**	.54**	-					
4. Introjected Regulation	2.81	1.35	1-7	.78	-.27**	-.10	.07	-				
5. External Regulation	2.16	1.11	1-7	.82	-.36**	-.00	.07	.57**	-			
6. Amotivation	1.91	1.00	1-7	.83	-.52**	-.12	-.09	.65**	.65**	-		
7. Subjective Vitality	5.06	0.90	1-7	.80	.27**	.28**	.42**	-.13	-.07	-.16	-	
8. Eudaimonic Well-Being	5.02	0.67	1-6	.80	.49**	.59**	.52**	-.14	-.15	-.31**	.46**	-

Note. *M* = Mean; *SD* = Standard Deviation; α = Cronbach alpha coefficient; ** $p < .01$.

convergent validity of the EWBSS with both athlete samples. The findings from this phase also provided support for the reliability of the EWBSS with both competitive and recreational athletes.

General Discussion

Research in sport has examined athletes' EWB demonstrating positive relationships between sport participation, autonomous motivation, and well-being (e.g., Adie et al., 2012). However, a notable limitation of this research is the absence of a sport specific measure of EWB. The first purpose of this research was to create an initial pool of items that capture well-being based on the eudaimonic perspective. Grounded in SDT, the initial 19 items were reduced to five items based on the feedback provided by five expert judges.

The second purpose of the present research was to examine the factorial validity and reliability of the five-item EWBSS. Thus, the new instrument was tested on a large sample with high level competitive athletes. The findings provided initial support for the factorial validity and reliability of the EWBSS. Given the EWBSS was a new instrument, further validation of the five-item structure with other samples was imperative. Accordingly, the factorial validity and reliability of the instrument were re-examined with a sample of competitive athletes and a sample of recreational athletes, and further psychometric testing of nomological and convergent validity was conducted. Supportive evidence concerning the different types of validity and internal consistency of the EWBSS was found in the sample of competitive athletes, while only partial support for the psychometric properties of EWBSS was found with recreational athletes.

In an attempt to understand why the EWBSS was more applicable to competitive athletes than recreational athletes, we asked participants from both samples to tell us in their opinion how applicable they felt that the EWBSS items are for themselves and their lives as athletes. While

the competitive athletes thought all items of the instrument were applicable to them, the recreational athletes commented that items 2 and 5 are not really suitable for their level of play. It seems that for the individuals that participate in sport primarily to experience enjoyment (i.e., intrinsic motivation), which is characteristic of recreational athletes, they lack specific goals or direction in sport (item 2) or they have goals that are not directly related to their sport (e.g., to be physically fit, to have meaningful relationships; Chatzisarantis & Hagger, 2007). Furthermore, as recreational athletes do not have a very strong athletic identity (Brewer, Van Raalte, & Linder, 1993; Lamont-Mills & Christensen, 2006), aspects of themselves are not identified by their sport (item 5). Therefore, based on the nature of the items, EWBSS appears to be more suitable for competitive athletes.

Our research is not without limitations. We only classified athletes as competitive and recreational. In addition to confirming the differences between competitive and recreational athletes in responding to EWBSS, it would be worthwhile to examine the instrument with other levels of competitive athletes (e.g., masters athletes, high school athletes) in order to determine if this instrument is appropriate for all competitive athletes. In this research we only considered the nomological and convergent validity of the EWBSS. Given the validation of an instrument is an ongoing process, more research is needed to examine other types of validity such as discriminant, predictive, and concurrent validity. The test-retest reliability of the instrument also needs to be investigated.

Previous studies have assessed EWB in sport by employing a global measure of well-being (e.g., SPWB) or by employing multiple measures to assess various aspects of EWB (e.g., subjective vitality, awareness). Our attempt to provide a single measure that is relatively short and easy to administer, while still encompassing the main components of EWB in sport, should

encourage researchers to use the new instrument in order to further examine and understand athletes' well-being. Researchers in future studies should investigate whether athletes' well-being varies with athletes' characteristics (e.g., age, gender, sport, stage of the competitive season, and cultural background). Future research should also examine the relationship between the EWBSS and other constructs of SDT (e.g., basic psychological needs) to see if the findings are consistent with tenets of SDT.

The findings from the present study have implications for coaches and practitioners working with athletes. As the EWBSS is a relatively straight forward instrument that reduces the burden on athletes, it can be easily administered multiple times throughout the season. Therefore, practitioners can design interventions that may enhance athletes' well-being and effectively assess these interventions employing the EWBSS.

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Study 2

Motivation and Eudaimonic Well-Being in Athletes: A Self-Determination Theory Perspective

Sport participation can play a significant role in individuals' physical and psychosocial health, functioning, and general quality of life (e.g., Adie, Duda, & Ntoumanis, 2012). Coaches and athletes highlight how important motivation is in the sport domain (Vallerand, 2004). Athletes engaging in sport for intrinsic reasons, such as enjoyment and inherent satisfaction, experience higher levels of well-being, persistence, and less symptoms of burnout (e.g., Lonsdale, Hodge, & Rose, 2009; Ntoumanis et al., 2014). Despite the intrinsic motivators, athletes can be otherwise motivated. Various extrinsic factors such as awards, trophies, athletic scholarships, and interpersonal pressures are used to motivate athletes (especially in elite and professional sports) to perform well and win, which can potentially undermine participation, interest, and enjoyment in sport (see Ryan & Deci, 2017).

Deci and Ryan's (1985) self-determination theory (SDT) as a theoretical framework of human motivation and behavior has been applied in sport to provide an understanding of athletes' participation (see Hagger & Chatzisarantis, 2007). The SDT framework posits a continuum in which motivation is progressively internalized (i.e., derived from within the self). Amotivation lies at one end of the continuum and is characterized by a complete lack of motivational drive, or a lack of intention to engage in a behavior. The other end of the continuum is anchored by intrinsic motivation which refers to motivation derived from the sheer pleasure and satisfaction of engaging in the behavior.

Between amotivation and intrinsic motivation lie four types of extrinsic motivation which successively increase in their degree of internalization (Ryan & Deci, 2000). The extrinsic motives are proposed to differentially regulate behavior and result in separable sets of

motivational and behavioral consequences. Two of the extrinsic regulations (i.e., external and introjected) are theorized to be more controlling in nature and represent motivation which is derived from an external locus of causality. External regulation represents the least internalized extrinsic regulation and refers to the desire to obtain external rewards or avoid punishments (Deci & Ryan, 2002). In sport, athletes may be externally motivated if they participate in order to win trophies, money, or gain recognition. Next, introjected regulation represents motives that are slightly more internalized than external regulation and is characterized by the desire to obtain intrapersonal rewards (e.g., pride) or to avoid self-inflicted punishments (e.g., guilt or shame [Deci & Ryan, 2002]). Athletes who persist at their sport because they feel that dropping out would be letting their team down are demonstrating introjection. As the continuum extends toward intrinsic motivation, identified and integrated regulations represent the more autonomous types of extrinsic motivation. Identification and integration are theorized to be derived from an internal locus of causality. Identified regulation refers to being motivated to perform a behavior because it is personally significant and it results in outcomes which are valued by the individual (Deci & Ryan, 2002). In a sport context, athletes may persist because they value the social connections or the physical fitness they derive from participation. The most internalized form of extrinsic motivation, integration, is represented by an individual's belief that a behavior is an important part of his or her identity and is consistent with his or her personal values (Deci & Ryan, 2002). In the case of integrated regulation, athletes may persist in sport because they feel that being "an athlete" is an important part of "who they are."

SDT postulates that self-determined types of motivation (i.e., identified regulation, integrated regulation, and intrinsic motivation) are more likely to be associated with positive, adaptive, behavioral outcomes, whereas less self-determined types (i.e., introjected regulation,

external regulation, and amotivation) should more likely be related with negative outcomes (Ryan & Deci, 2002; Vallerand, 2007). Research in sport has provided support for this theoretical claim. For example, Pope and Wilson (2012) found that male and female rugby players with more autonomous sport motivation reported more perceived effort playing rugby. In other studies, autonomous types of motivation have been found to be associated with better performance (Pope & Wilson, 2014), concentration (Pelletier et al., 1995), positive emotions and satisfaction with sport (Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009), subjective vitality (Alvarez, Balaguer, Castillo, & Duda, 2012), and flow (Kowal & Fortier, 1999). In contrast, less autonomous types of motivation have been related to maladaptive outcomes including drop out (Pelletier, Fortier, Vallerand, & Brière, 2001), negative affect (Mouratidis, Vansteenkiste, Lens, & Sideridis, 2008), and burnout (Lonsdale & Hodge, 2011).

Well-being and Sport Participation

There has been considerable interest in the relationship between motivation and well-being. In a review of the well-being literature, Ryan and Deci (2001) suggest that well-being has been derived from two approaches: the hedonic perspective that focuses on subjective well-being (i.e., happiness and pleasure [SWB]), and the eudaimonic perspective that focuses on eudaimonic well-being (i.e., optimal functioning and experience [EWB]). The core of SDT embraces various elements of the eudaimonic conception (Ryan, Huta, & Deci, 2008), with Ryan and Deci defining EWB in terms of the fully functioning person and operationalize it as a set of wellness aspects (e.g., vitality).

Ryff (1989) has also embraced the eudaimonic conceptualization of well-being and presented a multidimensional model (i.e., Scales of Psychological Well-Being) by identifying six distinct components (i.e., self-acceptance, positive relations with others, autonomy,

environmental mastery, purpose in life, and personal growth) to describe psychological well-being (PWB). The label of PWB is used interchangeably with EWB in Ryff's research (e.g., Ryff, 2013).

It is argued that sport participation is linked to physiological and psychological benefits (e.g., Adie et al., 2012), leading to well-being, but may also generate conditions that are detrimental for athletes (Bartholomew, Ntoumanis, Ryan, & Thogersen-Ntoumani, 2011). Accordingly, research has primarily focused on the pursuit of enhancing athletes' well-being since it may help athletes to overcome challenges and obstacles that they face in their sport life and experience optimal functioning (Lundqvist, 2011).

In a review related to well-being in competitive sports, the lack of conceptual clarity and consistency of the definition of well-being has been highlighted (Lundqvist, 2011). Moreover, the majority of studies have failed to make distinctions between general well-being and well-being specific to the sport context, leading to lack of measurements for assessing athletes' well-being (Galloway, Bell, Hamilton, & Scullion; 2006; Lundqvist, 2011).

Studies grounded in SDT (e.g., Adie, Duda, & Ntoumanis, 2008; Mack et al., 2011; Quested & Duda, 2010) have utilized various indicators to assess athletes' well-being approaching it from either the hedonic perspective (i.e., life satisfaction, presence of positive affect, and the absence of negative affect), or the eudaimonic perspective (i.e., optimal psychological functioning; Ryan & Deci, 2001). The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), and the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) are the measures that have been used to assess hedonic indices of athletes' well-being, whereas the Subjective Vitality Scale (SVS; Ryan &

Frederick, 1997) has been utilized to assess EWB in sport. It is important to note that none of these measures are sport specific.

Motivation and Well-Being in Sport

Several studies have examined motivation as a predictor of well-being indices and supported that autonomous types of motivation are associated with greater levels of well-being, whereas non-autonomous types of motivation are negatively associated with athletes' well-being. Gagné, Ryan, and Bargmann (2003) conducted a diary study with female adolescent gymnasts and by using multilevel modeling analysis found that athletes' intrinsic motivation and identified regulation for coming to practice predicted pre-practice well-being (i.e., vitality and positive and negative affect). Similar findings were reported by Alvarez et al. (2012) in a sample with young male soccer players. Specifically, the results showed that intrinsic motivation was positively related to athletes' subjective vitality. Some researchers have grouped the motivational regulations into two main variables, namely autonomous motivation and controlled motivation (by aggregating the intrinsic motivation, integrated and identified regulations, and the introjected and external regulations, respectively) to investigate the relationship between motivation and well-being. Using this approach, Healy, Ntoumanis, van Zanten, and Paine (2014) found autonomous motives were related to subjective vitality whereas no association was found between controlled motives and well-being, in regional-level team sport athletes.

Other studies have used the Self-Determination Index (SDI; Vallerand, 2007) which is also known as the Relative Autonomy Index (RAI; Ryan & Connell, 1989) to test and support the positive relationship between autonomous motivation and well-being. The SDI consists of the scores of the motivational subscales which are combined under one single score of self-determination by a weighting procedure (higher scores of the self-determined types of motivation

reflect higher self-determined motivation). Researchers use the SDI to reduce the number of variables that represent motivation in the tested model. For instance, Blanchard et al. (2009) showed that basketball players' self-determined motivation resulted in greater subjective well-being (i.e., positive emotions and satisfaction). Furthermore, a more recent study has longitudinally (i.e., two measurement points within five months) investigated level-change associations between perceived autonomy support from the coach, need satisfaction, motivation, and well-being over a competitive season with young elite skiers (Stenling, Lindwall, & Hassmén, 2015). The results demonstrated that the initial level of motivation at time 1 positively predicted change in athletes' general well-being.

Despite the fact that SDI has been widely used in sport research, some researchers have highlighted limitations of this index and recommended the examination of each type of motivation separately (e.g., Chemolli & Gagné, 2014; Martín-Albo, González-Cutre, & Núñez, 2014). Chemolli and Gagné (2014, p. 4) provided arguments against the use of the index (e.g., the index is a difference score, the weighing of each motivational regulation is problematic) underlining that "the multidimensionality of motivation, which is one of SDT's strengths relative to other motivation theories, is sacrificed with the use of the RAI".

The Present Study

The purpose of the present study was to replicate and extend previous findings by examining the relationship between motivation and EWB in athletes from various sports based on the SDT framework. Previous studies have combined the subscales and have computed the SDI to use it as a latent motivation variable (e.g., Stenling et al., 2015). In the present study, all the types of motivation were considered individually to examine how they separately influence EWB. It was hypothesized that the self-determined types of motivation (i.e., intrinsic

motivation, integrated regulation, and identified regulation) would positively predict EWB, whereas the less self-determined types of motivation (i.e., introjected regulation, external regulation, and amotivation) would negatively predict athletes' EWB.

A sport-specific EWB measure (Eudaimonic Well-Being in Sport Scale; Kouali, Hall, & Pope, 2018) was used to assess athletes' well-being. Although previous research has examined this association in sport settings (e.g., Gagné et al., 2003; Stenling et al., 2015) to our knowledge none of the studies has employed a sport specific well-being instrument.

Additionally, the present study included a large and heterogeneous sample. Athletes from 15 different individual and team sports participated in the study, whereas other studies have focused only on participants engaged in one single sport (e.g., basketball, Blanchard et al., 2009; skiing, Stenling et al., 2015). Moreover, while our sample included participants with a large age range (between 18-75 years), previous research has focused mostly on young athletes. For example, in Gagné et al. (2003) athletes' ages ranged from 7-18 years, whereas Stenling et al. (2015) included skiers between the ages of 16-20.

Method

Participants

The sample consisted of 399 (n_{males} = 312; $n_{females}$ = 87) athletes (M_{age} = 25.08, *SD* = 7.35) from 15 different individual and team sports. One hundred eighty-six athletes engaged in soccer, 55 track and field, 52 volleyball, 33 running, 28 basketball, 10 futsal, 10 swimming, 9 triathlon, 5 golf, 3 cycling, 3 waterskiing, 2 karate, 1 biathlon, 1 tennis, and 1 kickboxing. The athletes played at club (*n* = 21), varsity (*n* = 23), regional (*n* = 16), provincial (*n* = 287), national (*n* = 32), and international (*n* = 19) levels (1 athlete did not report his competitive level). On average, the athletes practiced 11.46 hours per week (*SD* = 4.10) and had been participating in

their sport for 11.92 years (*SD* = 5.87). In terms of the stage of the competitive season of their sport, athletes reported that they were at the pre-season stage (*n* = 276), early season stage (*n* = 48), middle season stage (*n* = 15), late season stage (*n* = 12), and off-season stage (*n* = 48). Participants described themselves as Caucasian (*n* = 364), African American (*n* = 9), Hispanic (*n* = 7), Asian (*n* = 3), and other (*n* = 16) and 96.7% (*n* = 386) indicated currently having a coach.

Measures

Demographics. The demographic questionnaire included information about age, gender, major sport, years of participation in respective sport, hours practiced per week, competitive level, ethnicity, stage of competitive season of major sport, and if they currently had a coach or not.

Motivation. Athletes' motivation was assessed using the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008). The BRSQ asked athletes the reasons they participate in their sport, responding on a seven-point Likert scale from 1 (*not at all true*) to 7 (*very true*). The 24-item questionnaire includes the dimensions of intrinsic motivation (e.g., "because I enjoy it"), integrated regulation (e.g., "because it's part of who I am"), identified regulation (e.g., "because the benefits of sport are important to me"), introjected regulation (e.g., "because I would feel ashamed if I quit"), external regulation (e.g., "because people push me to play"), and amotivation (e.g., "but I wonder what's the point"). Cronbach alpha coefficient scores were reported in the initial development of the BRSQ ranging from .77 to .91 (Lonsdale et al., 2008). Test-retest reliability and factorial validity of the BRSQ have been supported in four studies conducted by Lonsdale and colleagues (2008).

Eudaimonic well-being. The Eudaimonic Well-Being in Sport Scale (EWBSS; Kouali, Hall, & Pope, 2018) was employed to measure athletes' well-being. The EWBSS consists of

five items (e.g., “As an athlete, I feel that I continue to learn more about myself”), which were answered on a six-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Kouali et al. (2018) have tested the psychometric properties of the instrument. Evidence of internal consistency reliability, factorial validity, nomological validity, and convergent validity have been provided.

Procedure

Ethical approval was granted by the institutional research ethics board. Participants were recruited either in person or online. First, one of the investigators of the study contacted and received permission from coaches via email to approach the athletes. The potential participants were contacted before or after their practice with the investigator providing them a letter of information regarding the purpose, involvement, and confidentiality of the study. The athletes who agreed to participate completed the corresponding paper and pencil questionnaire (with the absence of the coaches). Additionally, communications coordinators of sporting associations were contacted via email and were asked to post the description of the study and the questionnaire link on their website. Thus, athletes that were interested to participate in the study could access the letter of information and survey link. The questionnaire took approximately 10-15 minutes to complete. Completion of the questionnaire indicated participants' consent to participate.

Data Analyses

After screening the data for outliers, missing and incomplete data, descriptive statistics and Cronbach alpha coefficients were calculated for all the examined variables. Bivariate correlations (Pearson correlation) were also computed to test patterns of association between the constructs. Given the EWBSS is a new instrument, a confirmatory factor analysis (CFA) was

conducted to assess factorial validity. Next, structural equation modeling was employed using AMOS 24.0 software (Arbuckle, 2016) to examine a full measurement model and structural model. Maximum likelihood estimation was used to test the hypotheses. The goodness-of-fit of the hypothesized models were tested using multiple indices (Hu & Bentler, 1999): the chi-square statistic (χ^2), the comparative fit index (CFI), the incremental fit index (IFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). According to Hu and Bentler (1999), for CFI and IFI values greater than .90 indicate a good fit, for RMSEA values equal or less than .06 are desired, while SRMR values less than .08 denote acceptable fit.

Results

Descriptive Statistics and Scale Reliabilities

The descriptive statistics and Cronbach alpha coefficients for all the measures are presented in Table 4. On average, participants scored above the midpoint for the EWB scale, intrinsic motivation, integrated regulation, and identified regulation subscales, and below the midpoint for the non-autonomous types of motivation (i.e., introjected regulation, external regulation, and amotivation) subscales. All the examined variables had acceptable levels of internal consistency with alphas ranging from .71 to .82.

Bivariate Correlations and CFA

The bivariate correlations between all the variables are also presented in Table 4. Athletes' autonomous forms of motivation were positively associated with EWB, with identified regulation emerging as the strongest correlate (r = .54, p < 0.01). Also, amotivation was more strongly negatively correlated with EWB (r = -.27, p < 0.01) than introjected and external

regulations. The CFA model representing the EWBSS revealed a good fit to the data (χ^2 (5) = 8.09, p = .15; *CFI* = .99; *IFI* = .99; *RMSEA* = .04; *SRMR* = .02).

Measurement and Structural Model

First, the measurement model (see Figure 1) was tested with a CFA examining the fit of the items of the motivational regulations subscales and EWB scale to their hypothesized factor. The latent variables were allowed to correlate with each other, with their variances having fixed values set to 1.00. The measurement model demonstrated an acceptable model fit (χ^2 (353) = 838.36, p = .000; *CFI* = .89; *IFI* = .89; *RMSEA* = .06; *SRMR* = .06). While a statistically significance result ($p < .05$) regarding χ^2 indicates problematic overall model fit, this model test is sensitive to sample size (Jöreskog & Sörbom, 1993); larger sample sizes are more likely to be significant, thus rejecting the model (Type 1 error). Additionally, moderate-to-strong standardized factor loadings were reported that ranged from .49 to .85. The structural model (see Figure 2) also showed adequate fit to the data (χ^2 (353) = 838.36, p = .000; *CFI* = .89; *IFI* = .89; *RMSEA* = .06; *SRMR* = .06) as it had the same fit characteristics with the measurement model. Path coefficients were significant at .05, .01, and .001 levels with the exception of the path between intrinsic motivation and EWB ($p > .05$).

Of the autonomous forms of motivation, integrated and identified regulations positively predicted athletes' EWB (β = .33 and β = .55, respectively) while athletes' intrinsic motivation negatively but not significantly predicted their EWB (β = -.11). Contrary to the hypothesis, external regulation was also a strong positive predictor of the EWB (β = .55). Finally, introjected regulation and amotivation negatively predicted athletes' EWB (β = -.40 and β = -.44, respectively).

Table 4

Descriptive Statistics, Reliability Coefficients, and Bivariate Correlations Between Study Variables

Variables	*M*	*SD*	Scale Range	α	1	2	3	4	5	6	7
1. Intrinsic Motivation	6.36	0.77	1-7	.73	-						
2. Integrated Regulation	6.00	0.91	1-7	.71	.48**	-					
3. Identified Regulation	5.87	1.00	1-7	.72	.48**	.49**	-				
4. Introjected Regulation	3.36	1.76	1-7	.81	-.18**	.12*	.04	-			
5. External Regulation	2.29	1.39	1-7	.80	-.25**	-.03	-.06	.62**	-		
6. Amotivation	2.57	1.47	1-7	.82	-.35**	-.15**	-.21**	.47**	.65	-	
7. Eudaimonic Well-Being	5.02	0.69	1-6	.74	.43**	.49**	.54**	-.09	-.12*	-.27**	-

Note. *M* = Mean; *SD* = Standard Deviation; α = Cronbach alpha coefficient; ** $p < .01$. * $p < .05$.

Discussion

The purpose of the present study was to examine the relationship between the different forms of motivation as proposed in SDT and EWB in sport. Two hypotheses were tested. First, it was hypothesized that autonomous types of motivation should be positively associated with athletes' well-being. The analysis partially supported the hypothesis. Integrated regulation and identified regulation moderately and strongly predicted well-being in sport, respectively. According to SDT, both regulations are the most autonomous forms of extrinsic motivation, as the individuals have internalized the reasons for their actions and their behavior is initiated out of choice (Ryan & Deci, 2000). Specifically, athletes who report engaging in their sport for integrated reasons have fully assimilated the identified regulation to the self and are accompanied by a sense of volition (Deci & Ryan, 2008; Ryan & Deci, 2000) leading to well-being. Moreover, with identified regulation athletes indicate participating in their sport because it is beneficial and important to them and helps them to achieve their personal valued goals (Vallerand & Losier, 1999). Therefore, it seems that athletes experienced a sense of purpose and direction in their sport life which indicates high levels of well-being. This finding is also supported by Gagné et al. (2003) who found identified regulation was a positive predictor of gymnasts' subjective vitality.

Contrary to our hypothesis, intrinsic motivation was not a significant predictor of athletes' well-being. Previous research has also shown that intrinsic motivation does not significantly predict other positive outcomes in sport. For example, Calvo, Cervelló, Jiménez, Iglesias, and Murcia (2010) have found that intrinsic motivation was not significantly linked to continued participation in a sample with adolescent soccer athletes. According to SDT, athletes' well-being is a positive outcome related to intrinsic reasons for sport participation (Ryan & Deci,

2000). In the present study, and similar to what has been reported in other studies (Pelletier et al., 2001), the athletes displayed high intrinsic motivation (M = 6.36, SD = .77) and athletes that do not have high intrinsic motivation tend to drop out of sport (Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002). Thus, given intrinsic motivation is generally high with small variability across all competition levels (i.e., recreational to international), it does not seem to distinguish between athletes with differing levels of EWB.

Furthermore, it has been suggested that there are situations where the activities are less or not interesting and enjoyable (e.g., practicing in bad weather), and therefore, integrated and identified regulations can be the best predictors of positive consequences, instead of intrinsic motivation (e.g., Koestner, Losier, Vallerand, & Carducci, 1996). The results of the present study generally supported this proposition, as the most autonomous forms of extrinsic motivation (i.e., integrated regulation and identified regulation) were significant predictors of athletes' well-being, whereas intrinsic motivation was not.

In terms of the less autonomous forms of motivation, introjected regulation negatively predicted EWB as was expected. Athletes engaging in their sport to avoid negative feelings like shame, guilt, or failure experienced low levels of well-being. In other words, athletes with introjected reasons for sport participation were controlled by internal pressure; thus, this control could lead to a lack of a sense of direction in their sport life, or may not allow them to feel very positive about themselves as athletes. Although the present finding aligns with SDT, this relationship has not been always supported. The majority of research has examined introjected regulation combined with external regulation as a composite score (e.g., Healy et al., 2014) or the subscale has been included in the SDI (e.g., Blanchard et al., 2009) and mixed findings were reported. For example, controlling motives (i.e., introjected and external regulations) of regional

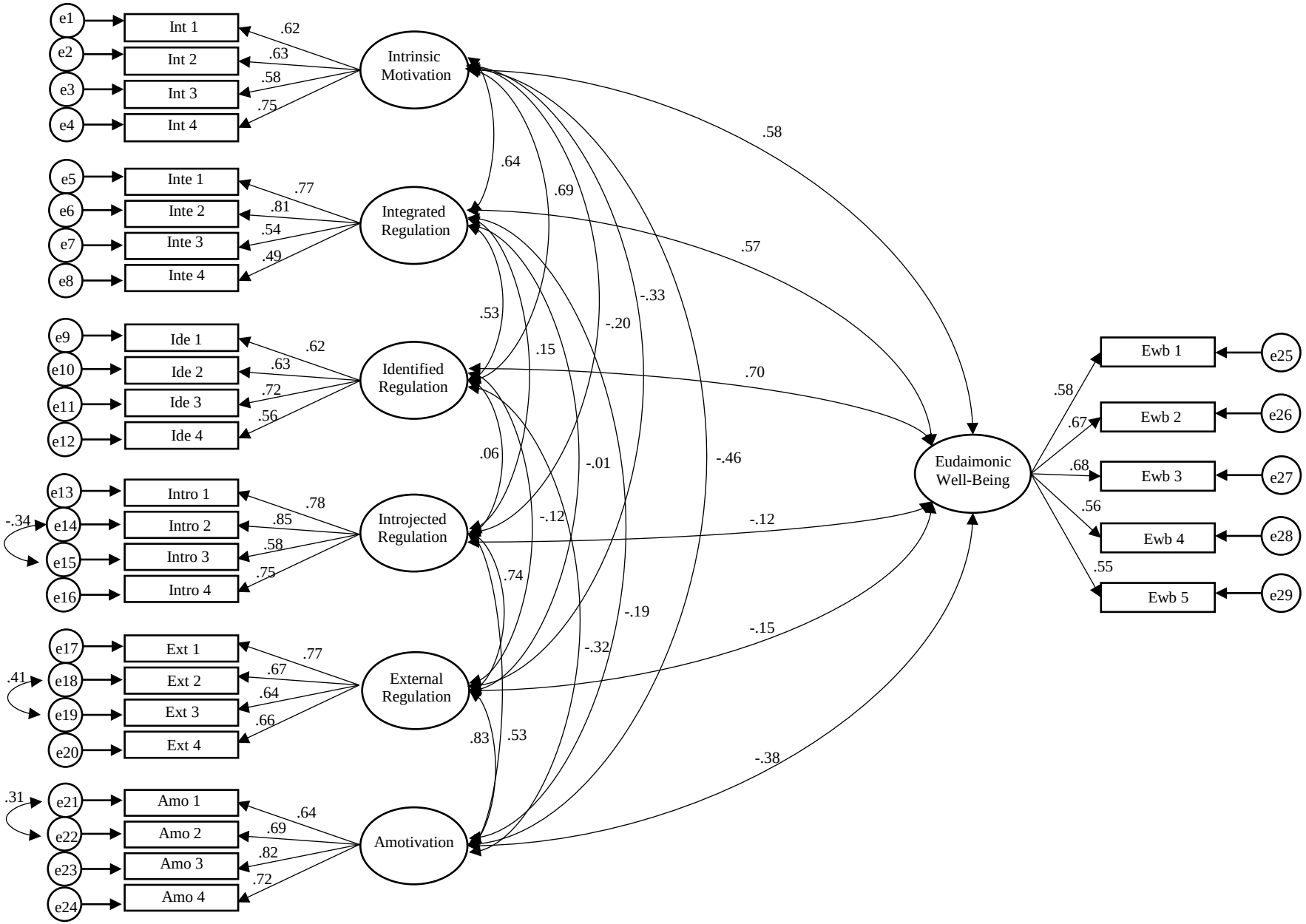

Figure 1. The measurement model with standardized path coefficients. Squares represent manifest variables (i.e., items of the subscales), ovals represent latent variables, and circles represent error terms.

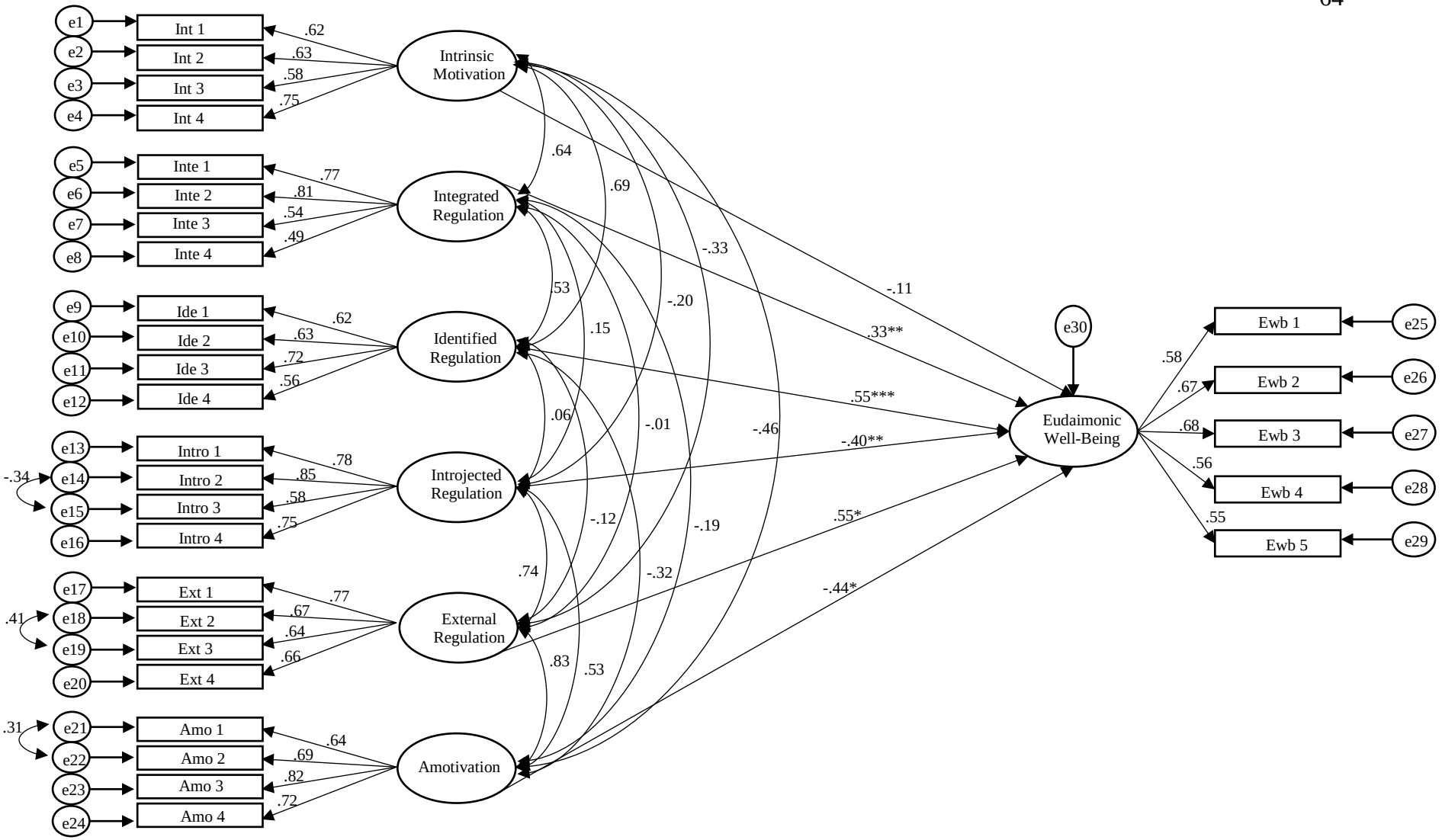

Figure 2. The structural model with standardized path coefficients. Squares represent manifest variables (i.e., items of the subscales), ovals represent latent variables, and circles represent error terms. * $p < .05$. ** $p < .01$. *** $p < .001$.

athletes participating in team sports were not linked with subjective vitality and were only related to burnout and physical ill-being symptoms (Healy et al., 2014). Similarly, in the physical education setting no relationship was been found between introjected regulation and positive affect in 950 British secondary school students (Standage, Duda, & Ntoumanis, 2005). On the other hand, Smith, Ntoumanis, and Duda (2007) found that controlling motives negatively predicted subjective well-being in a sample of British athletes from a variety of individual and team sports.

An interesting finding was that external regulation proved to be a positive predictor of well-being. The positive relationship between external regulation and athletes' well-being is contrary to SDT postulations that external regulation undermines well-being and is associated with less adaptive consequences (e.g., Gagné & Blanchard, 2007). Karageorghis and Terry (2011) stated that elite-level athletes who have both intrinsic and extrinsic motives, tend to have the best motivational outcomes. A number of studies in sport (e.g., Gillet, Vallerand, & Rosnet, 2009; Vlachopoulos, Karageorghis, & Terry, 2000) and physical education (e.g., Ullrich-French & Cox, 2009) have provided support for the positive effects of combining both types of motivation. For example, Vlachopoulos et al. (2000) examined motivational profiles in sport participants and found that the participants with high scores on all forms of motivation reported greater enjoyment, positive affect, satisfaction, and intention to continue sport participation compared to the participants characterized by a self-determined profile. In another study with French junior national fencers, the athletes that demonstrated high levels of both autonomous and controlled motivation at the beginning of the competitive season, obtained the best performance over the course of the competitive season (Gillet et al., 2009). Moreover, Markland and Ingledew (2007) suggest that when intrinsic motivation is dominant, extrinsic motivation does

not lead to detrimental effects on well-being. It seems that the extrinsic motives of the athletes can act in synergy with their intrinsic motives in leading to well-being.

As was hypothesized, amotivation negatively predicted EWB. Athletes who participated in their sport without intention, sense of purpose, and expectations experienced low well-being levels, suggesting that amotivated sport behavior resulted in athletes' feeling of dissatisfaction with themselves, and lack of improvement, direction, and goals in their sport life (Gagné et al., 2003; Healy et al., 2014). Similar findings were reported by Standage et al. (2005), as amotivation was a negative predictor of subjective well-being in young students participating in physical education classes. Other studies have focused on examining the association between amotivated behaviors and ill-being (e.g., Lonsdale et al., 2009). Mouratidis et al. (2008) showed that lack of motivation was a positive predictor of negative affect and depression in top young athletes from sport schools in Belgium. Furthermore, Isoard-Gautheur, Guillet-Descas, and Lemyre (2012) found amotivation was positively linked with burnout among high level young handball players.

Strengths, Limitations, and Future Research Directions

One of the strengths of this study was the multidimensional assessment of motivation. While many researchers have used the SDI to calculate an individual's relative autonomy as a single score (e.g., Stenling et al., 2015), in the present study each motivational regulation was examined individually. Investigating how the different forms of motivation were related independently with EWB, important information was provided to understand the complexity of this association.

Another strength of the current study was the use of a sport specific measure of EWB. The EWBSS can yield valuable information regarding athletes' sport life and can benefit SDT

research by allowing researchers to further investigate and understand the relationship between constructs of SDT and well-being specifically within the sport context.

Despite the strengths of the present study, there are some limitations to note. One limitation of the study is its cross-sectional design. As the majority of the participants were at the pre-season stage of the competitive season, it would be interesting to investigate the link between motivation and well-being at athletes' different competitive stages. Additionally, only self-report measures were used. Future research can be improved by including other types of measurement (e.g., observational data on athletes' behavior). A qualitative approach (e.g., focus groups, case studies) could also provide more in-depth information regarding the link between athletes' motives and their EWB, and identify potential factors that influence this relationship (e.g., social environment, basic psychological needs).

Furthermore, different measures have been used to examine motivation and EWB across studies in the sport domain (e.g., BRSQ; Lonsdale et al., 2008, SMS; Pelletier et al., 1995). Thus, caution must be used when comparing the findings from different studies. Assor, Vansteenkiste, and Kaplan (2009) proposed that there are two different types of introjected motivation (i.e., approach and avoidance introjection). Based on this distinction, Ntoumanis (2012) suggested that external regulation also includes different components (e.g., avoid punishment, gain rewards) that may have unique consequences. The introjected regulation subscale from BRSQ (Lonsdale et al., 2008) focuses on the avoidance component while the external regulation subscale focuses on the feeling of pressure. Future studies should further examine the different components of introjected and external regulations, and perhaps develop a subscale incorporating items for both types.

These findings have implications for coaches and practitioners working with athletes in any type of sport, especially at elite levels. Athletes can be encouraged to use various psychological techniques in order to enhance their motives and consequently increase their well-being levels. For example, goal setting, imagery, and self-talk interventions can be designed based on the individual needs of each athlete to improve their well-being. Achieving high well-being will have a positive influence on both how athletes practice and perform in competition, as well as cope with diverse challenges in their sport life.

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Study 3

Examining the Effectiveness of an Imagery Intervention in Enhancing Athletes' Eudaimonic Well-Being

Sport has the potential to promote positive experiences, physical and psychosocial health, and increased well-being in athletes (Coakley, 2007). However, the stressful and competitive sport environment also involves various demands and challenges in athletes' participation (Mosewich, Crocker, Kowalski, & DeLongis, 2013). Athletes can be faced with difficulties that lead to detrimental outcomes such as injuries, overtraining and burnout, stress and competitive anxiety, and consequently athletes' well-being can be negatively influenced (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011).

The main focus of applied sport psychology is on enhancing the personal development and sport performance of athletes (Sappington & Longshore, 2015; Vealey, 2007). Sport psychology consultants have applied various mental training programs based on different approaches (e.g., cognitive-behavioral, acceptance-based behavioral) to help athletes of all skill levels achieve performance excellence (see Aoyagi & Poczwardowski, 2012). The majority of mental training programs emphasize the development of psychological skills and techniques such as imagery, self-talk, goal setting, confidence, relaxation, and arousal regulation (Weinberg & Williams, 2010). The effectiveness of these tools has been examined in numerous research interventions in a variety of sports in which single or combined psychological skills are learned and implemented by athletes (e.g., Golby & Wood, 2016; Sheard & Golby, 2006).

Imagery in Sport

Morris, Spittle, and Watt (2005) have emphasized that imagery is a powerful psychological technique/skill that may facilitate athletes' optimal performance directly, or may

influence their cognitive and affective states that facilitate performance. Athletes use imagery for various functions (i.e., cognitive and motivational; Paivio, 1985). Hall, Mack, Paivio, and Hausenblas (1998) described five functions of imagery use in sport: cognitive specific (CS; execution of specific skills), cognitive general (CG; execution of strategies), motivational specific (MS; goal-oriented responses), motivational general-arousal (MG-A; regulation of arousal and stress) and motivational general-mastery (MG-M; control, mental toughness, and self-confidence).

Researchers have conducted imagery interventions targeting these functions. Most interventions have focused on CS imagery (e.g., Munroe-Chandler, Hall, Fishburne, Murphy, & Hall, 2012) and have demonstrated the positive impact imagery can have on performance. In terms of the motivational imagery interventions studies, there is evidence supporting the impact of imagery on psychological variables such as motivation, arousal level, and self-confidence (Mellalieu, Hanton, & Thomas, 2009). MG-M imagery interventions have proven to be effective in increasing athletes' levels of self-confidence and self-efficacy (e.g., Callow, Hardy, & Hall, 2001; Hammond, Gregg, Hrycaiko, Mactavish, & Leslie-Toogood, 2012; Munroe-Chandler, & Hall, 2004; O, Munroe-Chandler, Hall, & Hall, 2014). Studies have also indicated that imagery can regulate emotions. For example, Jones, Mace, Bray, MacRae, and Stockbridge (2002) examined the effects of a MG-M and MG-A based imagery intervention in novice climbers. The results revealed that MG-M and MG-A imagery were effective in controlling emotions and enhancing self-efficacy. Similarly, in Mellalieu et al.'s (2009) study a MG-A imagery intervention was effective in modifying the interpretation of precompetitive symptoms and increasing self-confidence in rugby union players.

Effects of Imagery on Well-Being in Sport

Despite the effects of imagery use on psychological outcomes, research examining the influence of imagery use on athletes' well-being has been relatively limited. The well-being literature highlights two main conceptualizations of the construct (i.e., subjective well-being and eudaimonic well-being) that have been derived from two philosophical perspectives (i.e., hedonic and eudaimonic; Ryan & Deci, 2001). Subjective well-being (SWB) refers to life satisfaction, the presence of positive affect, and the absence of negative affect, whereas eudaimonic well-being (EWB) refers to optimal functioning and experience (Ryan & Deci, 2001).

Existing intervention studies have examined the effects of combined or multicomponent psychological skill packages on aspects of well-being and other psychological constructs that are linked with well-being (e.g., Edwards & Steyn, 2008, Golby & Wood, 2016). For example, Sheard and Golby (2006) implemented a seven-week psychological skill training (PST) program (imagery was included in one session) with adolescent high-performing swimmers. The findings showed an overall significant improvement in athletes' positive psychological development (i.e., mental toughness, hardiness, self-esteem, self-efficacy, dispositional optimism) and positive affectivity (which is part of the definition of subjective well-being). Additionally, student-athlete rowers improved their perceived efficacy, self-esteem, and positive affect following a PST program with positive imagery being included in the utilized techniques (Golby & Wood, 2016).

In another study, Edwards and Steyn (2008) investigated the effectiveness of a PST program on youth track athletes' EWB in an individual and group context. Results demonstrated that imagery together with seven other psychological skills improved well-being at both the individual and group level, which was assessed by six distinct components (i.e., self-acceptance,

positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth; Ryff, 1989). A few years later, Edwards and Edwards (2012) employed a mixed method design to evaluate a similar PST program with a sample of provincial rugby players. The findings revealed that athletes increased their well-being over time compared to a control group and the aspect of personal growth was perceived as highly valued.

In a review regarding the effectiveness of psychological interventions during the sport injury rehabilitation process, Reese, Pittsinger, and Yang (2012) provided findings from two studies demonstrating that guided imagery along with relaxation and other psychological skills improved indicators of subjective well-being. Competitive level athletes with long-term injuries increased their mood level during and at the end of a rehabilitation period following training with multiple techniques (Johnson, 2000). Moreover, imagery combined with relaxation was found to be the most effective technique. Cupal and Brewer (2001) implemented a relaxation and imagery intervention with recreational and competitive athletes following anterior cruciate ligament (ACL) reconstruction and showed that the intervention decreased re-injury anxiety 24 weeks post-surgery compared to a control condition.

Dubuc-Charbonneau and Durand-Bush (2015) conducted a study guided by the Resonance Performance Model (RPM; Newburg, Kimiecik, Durand-Bush, & Doell, 2002) and the Cognitive-Affective Stress-Based Burnout Model (Smith, 1986) to examine the impact of a self-regulation intervention on the stress, burnout, SWB and EWB, and self-regulation capacity of university student-athletes experiencing burnout. Both models focus on how athletes can regulate the way they feel, think, and behave to achieve optimal functioning and cope with obstacles. Accordingly, the self-regulation framework included implementation of various strategies by the athletes in which imagery was included. The results of the study revealed a

reduction of stress and burnout, improved SWB and EWB, and an increased capacity to self-regulate. In two additional studies, Durand-Bush and colleagues have also demonstrated the effectiveness on athletes' well-being of self-regulation interventions based on the RPM (Arcand, Durand-Bush, & Miall, 2007; Collins & Durand-Bush, 2010).

Mindfulness and acceptance-based approaches, such as Mindfulness Acceptance Commitment (MAC; Gardner & Moore, 2004, 2006, 2007) and Mindful Sport Performance Enhancement (MSPE; Kaufman, Glass, & Arnkoff, 2009) are included in another alternative class of interventions for the enhancement of performance and overall well-being. The focus of these approaches is to help athletes develop mindful non-judgmental awareness and acceptance of internal experiences. While mindfulness and acceptance-based approaches have been reported as a distinct class of interventions from PST in the sport context (e.g., De Petrillo, Kaufman, Glass, & Arnkoff, 2009; Gardner & Moore, 2007) some interventions have integrated imagery. For example, mindful exercises in the MAC protocol that are used for the development of mindful awareness include imagery use (e.g., mindfulness of the breath exercise; Segal, Williams, & Teasdale, 2012). Kabat-Zinn, Beall, and Rippe (1985) also used imagery in their mindfulness training in sport. Likewise, more recently Baltzell and Akhtar (2014) included the use of imagery (i.e., recall past performance events that involved negative feelings) in their mindfulness meditation training for sport program.

Examining the effectiveness of mindfulness and acceptance approaches in sport, Noetel, Ciarrochi, Van Zanden, and Lonsdale (2017) reviewed 66 studies with results indicating that these approaches may be beneficial for athletes (e.g., reduced competitive anxiety and burnout, increased confidence and flow). Similarly, in another systematic review in which nine studies were included, decrease in anxiety and increase in flow and goal-oriented energy were found in

athletes following mindfulness practice (Bühlmayer, Birrer, Rothlin, Faude, & Donath, 2017). Despite the positive findings, Noetel et al. and Buhlmayer et al. (2017) highlighted that studies with higher quality are needed to support the efficacy of mindfulness and acceptance approaches. It should be noted that none of the aforementioned intervention studies have utilized well-being measures specific to the sport context.

Imagery Interventions in Soccer

The majority of studies implementing imagery-based interventions, or psychological intervention packages using various mental skills along with imagery in soccer players have demonstrated positive performance results (e.g., Jordet, 2005; Seif-Barghi, Kordi, Memari, Mansournia, & Jalali-Ghomi, 2012; Thelwell, Greenlees, & Weston, 2010; Veraksa, Gorovaya, Leonov, Pashenko, & Fedorov, 2012). Different experimental designs were implemented and the length of each intervention varied from eight to 14 weeks. For instance, using a single-subject multiple baseline design, Thelwell and colleagues (2006, 2010) incorporated imagery as part of a psychological skill intervention package to investigate the effectiveness of the intervention (over a nine and eight-game period) on performance subcomponents (i.e., first touch, passing, and tackling) with midfield soccer players. All performers showed at least small improvements on each subcomponent. More recently, Munroe-Chandler et al. (2012) investigated the effects of a six- week period CS imagery intervention on skill performance of youth soccer players aged 7-14 years. The results showed that the youngest (7-8 years) athletes improved their soccer performance (i.e., decreased time to complete a task).

Apart from examining the relationship between imagery and performance enhancement, few studies investigated the influence of imagery on other positive outcomes associated with soccer. In Munroe-Chandler and Hall's (2004) study, a staggered multiple-baseline across

groups design was employed with youth forwards and midfielders and the MG-M imagery intervention increased their collective efficacy for both training and competition. Furthermore, Pain, Harwood, and Anderson (2011) delivered an intervention by using a single-subject multiple baseline design with multiple treatments to examine the efficacy of MG-M imagery combined with asynchronous music on flow. The results showed that imagery and music when combined increased flow experience across all soccer players during their pre-match warm-up.

The Present Study

Within elite sport, there has been a growing interest regarding the mental health of athletes with recent results indicating that athletes may experience depressive symptoms, anxiety disorders, eating disorders, and sleep problems (Bauman, 2016; Hammond, Gialloreto, Kubas, & Davis, 2013; Nixdorf, Frank, & Beckmann, 2016). Accordingly, it has been argued that particular attention should be paid to the protection and promotion of well-being for athletes' sport life (Breslin, Leavey, Donnelly, Shannon, & Haughey, 2017; Schaal et al., 2011). Although research has supported the positive impact of imagery use in PST to optimize athletes' sport experiences (Morris, 2010), there is a lack of interventions examining the effectiveness of imagery-based intervention on athletes' EWB. Therefore, the purpose of the present study was to examine the effectiveness of an imagery intervention specifically designed to enhance the EWB of soccer players.

The sport of soccer was chosen because it is an internationally recognized sport in which achieving the control of mind, body, and emotions is important for optimal performance (Beswick, 2001). Beswick described soccer as a game that combines motion and emotion with athletes' mind being their most powerful tool in order to become complete players. Accordingly,

building a mental game plan through attaining the correct mental state for 90 minutes may lead to positive psychological and performance outcomes for athletes.

Method

Participants

Five female soccer players (M_{age} = 19.80, *SD* = 1.64) agreed to participate in the study. All athletes were playing on the same varsity soccer team at a post-secondary school in Southwestern Ontario, Canada. On average, the athletes practiced 12.80 hours per week (*SD* = 2.17) and reported having played soccer for 14.80 years (*SD* = 2.28). All participants described themselves as Caucasian. In terms of soccer position, two of the players were defenders (Participants A and C), two others were strikers (Participants D and E), and one was a goalkeeper (Participant B). Participant D was a first year player, Participants B and C were second year players, whereas Participants A and E were final year players.

Measures

Demographics. The demographic questionnaire included information about age, gender, ethnicity, years of participation in soccer, hours practiced per week, and soccer position.

Imagery use. The Sport Imagery Questionnaire (SIQ; Hall et al., 1998) was employed to assess how frequently athletes used the five different functions of imagery before and after the intervention. The SIQ comprises 30 items with five subscales of six items each. Examples of the imagery items for each subscale include: “I make up new plans/strategies in my head” (CG), “I can mentally make corrections to physical skills” (CS), “I imagine myself winning a medal” (MS), “I imagine the stress and anxiety associated with competing” (MG-A), and “I imagine myself appearing self-confident in front of my opponents” (MG-M). Participants rate the

frequency with which they use each type of imagery on a 7-point Likert scale from 1 (*rarely*) to 7 (*often*). Predictive and factorial validity has been supported by Hall and colleagues (1998).

Imagery ability. The Vividness of Movement Imagery Questionnaire-2 (VMIQ-2; Roberts, Callow, Hardy, Markland, & Bringer, 2008) is a measure of imagery ability and was used to assess the vividness of athletes' imagery before and after the intervention. The VMIQ-2 consists of 12 movements (e.g., walking, running, kicking a stone) which athletes are asked to image both visually (i.e., external visual imagery and internal visual imagery) and kinesthetically. Participants are required to respond on a 5-point Likert scale from 1 (*no image at all, you only "know" that you are thinking of the skill*) to 5 (*perfectly clear and vivid as normal vision*) for each movement regarding their vividness of imaging. The VMIQ-2 has shown acceptable factorial, concurrent, and construct validity (Roberts et al., 2008).

Basic psychological need satisfaction. Athletes completed the Basic Needs Satisfaction in Sport Scale (BNSSS; Ng, Lonsdale, & Hodge, 2011) to assess perceived autonomy, competence, and relatedness (the three psychological needs posited in Self Determination Theory [SDT]; Deci & Ryan, 2002) before, during, and after the intervention. The BNSSS includes three subscales: autonomy with 10 items (e.g., "In my sport, I feel I am pursuing goals that are my own"), competence with five items (e.g., "I feel I am good at my sport"), and relatedness with five items ("In my sport, I feel close to other people"). Each item is assessed across a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). Ng et al. (2011) provided initial reliability and construct validity evidence.

Motivation. Athletes' types of motivation as proposed in SDT (Deci & Ryan, 2002) were assessed using the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008) before, during, and after intervention. The BRSQ asked athletes why they

participate in their sport, responding on a 7-point Likert scale from 1 (*not at all true*) to 7 (*very true*). The 24-item questionnaire consists of the dimensions of intrinsic motivation (e.g., "because I like it"), integrated regulation (e.g., "because it's an opportunity to just be who I am"), identified regulation (e.g., "because the benefits of sport are important to me"), introjected regulation (e.g., "because I would feel guilty if I quit"), external regulation (e.g., "because people push me to play"), and amotivation (e.g., "but I wonder what's the point"). Cronbach alpha coefficient scores were reported in the initial development of the BRSQ ranging from .77 to .91 (Lonsdale et al., 2008). Test-retest reliability and factorial validity of the BRSQ have been supported in four studies conducted by Lonsdale and colleagues (2008).

Eudaimonic well-being. The Eudaimonic Well-Being in Sport Scale (EWBSS; Kouali, Hall, & Pope, 2018) was employed to measure athletes' well-being during the baseline, intervention, and post-intervention phases. The EWBSS consists of five items (e.g., "As an athlete, I feel that I continue to learn more about myself"), which are answered on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Kouali et al. (2018) have tested the psychometric properties of the instrument and evidence of internal consistency reliability, factorial validity, nomological validity, and convergent validity was provided.

Manipulation check. Imagery diaries were used by the participants during the intervention phase to monitor their imagery use and promote adherence to the intervention (Callow & Waters, 2005; Cumming & Ramsey, 2009; Shambrook & Bull, 1996). Each participant was asked to keep track of their imagery practice and report any comments or concerns they may have about it.

Social validation. A post-intervention interview was conducted by the researcher in order to gather more information about athletes' views regarding the intervention and their

overall experience practicing imagery (Callow et al., 2001). The participants were asked questions regarding the perceived effectiveness of the intervention, as well as the impact of imagery on their well-being.

Experimental Design and Procedure

A single-subject multiple baseline research design was employed (Barlow & Hersen, 1984). Using this design, the intervention was introduced to participants at different points in time. If a change occurs for each baseline immediately after introducing the intervention, the effects are attributed to the intervention. Based on Barlow and Hersen's (1984) recommendation of three points as a minimum in a baseline, Participants A and B began the intervention after three sessions, Participants C and D after four sessions, and Participant E after five sessions. All participants had equal number of data points (eight) throughout the intervention phase. During the post-intervention phase participants completed a different number data points. Participants A and B yielded five data points, Participants C and D yielded four data points, and Participant E yielded three data points. In total, all participants completed 16 data points across the study period.

After receiving ethical clearance, one of the researchers identified coaches' contact information via the official websites of two varsity soccer teams and contacted them via email to ask for permission to have access to the players at their practice facility. The researcher spoke with each team before their practice explaining to them briefly the purpose of the study and little cards with the researcher's contact information (i.e., name and email address) were provided to them. Each interested athlete emailed the researcher (only five soccer players contacted the researcher) and began meeting individually with the researcher outside of practice once or twice a week at the athlete's convenience. During the first session participants signed a consent form

and completed a series of baseline questionnaires (i.e., demographic questionnaire, SIQ, VMIQ-2, BNSSS, BRSQ, and EWBSS). Following the first session, the athletes completed the EWBSS at each session of the baseline phase.

Throughout the intervention phase, each session lasted approximately 15-25 minutes. The researcher instructed participants to get into a comfortable position and close their eyes, and then started reading the imagery script to them. A new imagery script was given to the players every two sessions (four scripts in total) and they had the opportunity to ask questions or discuss any problems. Accordingly, personalized aspects were incorporated to the scripts. Specifically, stimulus prepositions (i.e., characteristics of the situation) and response prepositions (i.e., physiological and affective responses to the situation) were included so every image was relevant and had a particular meaning to each athlete (Lang, 1979). During each session the athletes were also asked to complete the EWBSS. Following the fourth session, participants completed the BNSSS and BRSQ once again. Additionally, participants were provided with the imagery scripts in audio format to practice on their own daily for 5-10 minutes and were asked to keep track of their imagery use in imagery diaries.

Following the intervention phase, the researcher continued meeting with the participants until the end of the post-intervention phase. At each session the participants completed the EWBSS. During the last session of the post-intervention phase the athletes again completed all the same questionnaires as in the first session of the baseline phase. In addition, a semi-structured interview was conducted with each participant focusing on their experience during the study and the effectiveness of the intervention. Each interview lasted approximately 30 minutes.

Imagery Scripts

Four different imagery scripts were developed by the researcher, corresponding to aspects of EWB in the sport context (i.e., purpose in sport, self-acceptance through sport, and personal growth through sport). Specifically, Script 1 guided each athlete to imagine a goal they had set and wanted to achieve by the end of the competitive season, with an emphasis on the steps that they needed to follow, the commitment to their goal, and the feeling of satisfaction with respect to the effort they put in. In Script 2, participants had to recall a difficult situation in which their performance was poor and find the way to overcome this challenge through accepting the failure, being self-aware of their athletic strengths, and having a positive attitude towards themselves. The main focus of Script 3 was the feeling of continual improvement and development in their sport life, with athletes imagining and comparing the "past-self" with the "present-self". Finally, in Script 4 all aspects of the first three scripts were included; athletes were asked to imagine themselves evaluating the competitive season by accepting both their mistakes and positive outcomes, thinking how they had accomplished their goals, and how they had developed throughout the year.

Data Analysis

Intervention effects. Visual analysis was used to analyze each participant's data (Kratochwill et al., 2010). This method involves examining whether the intervention has yielded a reliable change in the data for each participant. Five features were assessed in the graphically displayed data, individually and collectively: level, trend, variability, immediacy of the effect, and overlap. Level refers to the mean score within each phase (baseline, intervention, post-intervention) and trend to the slope of the best-fitting line for the data within each phase. Variability refers to the range or standard deviation of the data within each phase. Immediacy of

the effect refers to the change in mean between the last three data points of one phase (i.e., baseline phase) and the first three data points of the next phase (i.e., intervention phase). Overlap refers to the percentage of overlapping data points between one phase (i.e., intervention phase) and the previous one (i.e., baseline phase).

While visual analysis has been a traditional method to analyze data in single-subject multiple baseline designs, statistical analyses were also used to compliment the visual analysis (Gage & Lewis, 2013). Specifically, percentage of non-overlapping data points (PND; Scruggs & Mastropieri, 1998) and standardized mean difference (SMD_{all}; Rosnow & Rosenthal, 1996) were calculated. PND calculates the percentage of data points in the intervention phase that exceeds the highest value of the baseline phase. SMD_{all} as an effect size calculation refers to the difference between the intervention average and baseline average divided by the standard deviation of baseline phase.

The results were interpreted based on Martin and Pear's (1996) guidelines, to determine the existence of an intervention effect: a) the data points of the baseline phase being in a stable or opposite direction of the predicted effects of the intervention; b) the effect was replicated both within and across participants; c) a small proportion of data that were overlapping between the baseline and intervention phases, with PND scores of 90% indicating very effective treatment, 70%-89% representing effective treatment, and 50% or less representing ineffective treatment (Scruggs & Mastropieri, 2001); and d) an SMD_{all} of .25 representing a large effect size and .09 indicating a medium effect size (Cohen, 1988). PND scores should be interpreted with caution as this effect size calculation has been criticized (e.g., Wolery, Busick, Reichow, & Barton, 2010).

Post-intervention interview. Interviews were audio-recorded, transcribed verbatim, and imported into Atlas.ti for analysis. After removing identifying information, content analysis employing both deductive and inductive approaches was used (Hsieh & Shannon, 2005). First, a deductive analysis process was used to analyze the data by developing categories based on eudaimonic aspects of well-being (Ryan & Deci, 2001; Ryff, 1989) and related literature on imagery. Two investigators read and re-read each participant's responses and independently coded all the data that correspond to the identified categories (Polit & Beck, 2012). Any disagreement and non-congruent codings were discussed and modifications were made until agreement was reached. Second, the first researcher re-examined the data to determine if new categories and relationships among data had emerged (i.e., the inductive analysis process). Then, the second researcher thoroughly read the interviews once again to ensure that the data reflected the new categories and that no relevant data have been excluded.

Results

Descriptive Statistics

The descriptive statistics for the athletes' responses on the SIQ, VMIQ-2, BNSSS, and BRSQ for the baseline, intervention and post-intervention phases are presented in Table 5. On average, participants' scores on the SIQ and VMIQ-2 subscales increased from baseline to post-intervention (with the exception of CG and MS for Participant A). Subscale scores on the BNSSS also generally increased for all participants (Participants A and B showed a slight decrease on autonomy). In terms of the BRSQ, participants varied in their ratings on each subscale across the three phases of the study. Participants A and E reported the highest scores on intrinsic motivation, and Participants A and B reported the lowest scores on amotivation throughout the study.

Table 5

Descriptive Statistics for SIQ, VMIQ-2, BNSSS, and BRSQ at Baseline, Intervention, and Post-Intervention Phases

	Participant A			Participant B			Participant C			Participant D			Participant E		
Variable	Base	Inter	Post	Base	Inter	Post	Base	Inter	Post	Base	Inter	Post	Base	Inter	Post
Imagery use															
CS	4.67	-	5.83	2.67	-	5.33	3.0	-	5.5	5.67	-	6.83	1.67	-	5.0
CG	5.83	-	4.5	2.5	-	5.17	2.67	-	4.83	4.0	-	6.83	1.83	-	5.0
MG-M	3.67	-	4.5	3.67	-	5.67	3.67	-	6.0	6.17	-	6.83	2.0	-	5.5
MG-A	2.67	-	3.33	3.83	-	5.5	4.0	-	5.33	3.83	-	6.5	2.67	-	5.0
MS	2.33	-	1.67	4.17	-	6.33	4.5	-	6.5	2.83	-	6.67	2.5	-	5.83
Imagery ability															
External	2.75	-	3.75	1.83	-	3.92	2.67	-	4.33	3.67	-	4.58	1.0	-	2.58
Internal	3.08	-	4.42	4.0	-	4.25	3.58	-	4.67	4.92	-	5.0	1.25	-	3.17
Kinesthetic	2.75	-	3.83	2.17	-	3.75	4.25	-	4.33	4.75	-	4.92	1.0	-	2.5
Needs satisfaction															
Autonomy	6.6	6.5	6.3	5.6	5.9	5.9	5.5	5.2	5.4	5.5	6.3	6.7	6.3	6.4	6.5
Competence	7.0	7.0	7.0	6.0	6.2	6.5	5.8	5.4	6.1	6.4	6.0	6.9	6.0	6.0	6.1
Relatedness	6.6	7.0	7.0	6.4	6.6	6.7	6.8	6.4	6.9	6.8	6.0	7.0	6.0	6.0	6.2
Motivation															
Intrinsic	7.0	7.0	7.0	6.5	6.75	6.25	6.75	6.25	6.13	7.0	6.5	7.0	7.0	7.0	7.0
Integrated	6.0	5.5	5.5	5.0	5.75	5.88	6.25	6.0	5.75	6.75	6.5	6.63	6.0	6.5	6.25
Identified	5.5	6.5	6.0	6.75	5.75	6.38	6.5	5.5	6.25	7.0	6.5	7.0	6.75	6.25	6.35
Introjected	1.25	2.0	2.0	2.25	4.75	3.13	4.0	5.5	5.38	1.75	1.0	1.13	2.5	2.75	2.63
External	1.5	2.75	1.38	1.25	3.5	3.0	2.25	4.25	4.75	1.0	1.25	1.0	1.0	1.25	1.38
Amotivation	1.0	1.0	1.0	1.0	1.0	1.0	1.25	3.75	2.38	1.0	1.25	1.0	1.25	1.0	1.0

Note. Base = Baseline; Inte = Intervention; Post = Post-intervention, CS = cognitive specific; CG = cognitive general; MG-M = motivational general mastery; MG-A = motivational general arousal; MS = motivational specific.

Intervention Effects

The graphed EWB data for each participant are presented in Figure 3. Level, variability, trend, and immediacy of effect for EWB, are provided in Table 6.

Eudaimonic well-being. Participant A's data demonstrated a stable trend during both the baseline and intervention phases without presenting any treatment effect as there was minimal difference in the means between the two phases. PND was 0% (no data points in the intervention phase exceeded the highest data points in the baseline phase) and SMD_{all} was -2.34, indicating no effect. Participant B showed a decreasing trend during the baseline phase and an increasing trend during the intervention phase. Evidence of an intervention effect was observed by a small level increase, suggesting an immediate effect. Additionally, PND was 0% (no data points in the intervention phase exceeded the highest data points in the baseline phase) and SMD_{all} was .30. Visual inspection of the data for Participant C showed a stable/decreasing trend in the baseline phase and an increasing trend during the intervention phase. Additionally, there was a small increase in level, suggesting a delayed effect. PND was calculated to be 37.5% and SMD_{all} was .92. Participant D did not demonstrate a change in trend from the baseline to the intervention phase, indicating no treatment effect. PND was 0% (no data points in the intervention phase exceeded the highest data points in the baseline phase) and SMD_{all} was .80. Participant E's data also did not illustrate any change in trend between the two phases, indicating no treatment effect. PND was calculated to be 75% and SMD_{all} was zero (because the standard deviation for the baseline data was zero).

Taken together, the results from the visual inspection and statistical analyses (according to SMD_{all}) revealed that for Participant B and Participant C there was an observable small

increase in EWB. In contrast, for Participants A, D, and E, there was no change in EWB for the intervention phase.

Table 6
Visual Analysis of EWB During Baseline and Intervention Phases

	Level and variability		Trend		Immediacy
Participant	Baseline	Intervention	Baseline	Intervention	of effect
A	5.87 (0.09)	5.65 (0.09)	Stable	Stable	n/a
B	5.40 (0.33)	5.50 (0.22)	Decreasing	Increasing	Immediate
C	4.95 (0.22)	5.15 (0.24)	Stable/Decreasing	Increasing	Delayed
D	5.90 (0.10)	5.98 (0.07)	Stable	Stable	n/a
E	5.20 (0.00)	5.35 (0.09)	Stable	Stable	n/a

Manipulation Check

All participants completed the imagery diaries and indicated that their imagery got progressively easier throughout the intervention period.

Post-Intervention Interview

Two main themes emerged from data analysis regarding the impact of imagery use on the athletes' lives, well-being and resilience/coping strategies. Well-being was further broken down into six categories: purpose in sport, self-acceptance through sport, personal growth through sport, purpose in life, self-acceptance through life, and personal growth through life. Resilience/coping strategies was divided into four categories: thought control, emotion regulation, focus, and confidence.

Well-being. ***Purpose in sport.*** Athletes described that imagery use helped them to set goals, focus on what is needed to achieve these goals, and have a positive direction. For instance, Participant B stated, "I believe that it [imagery] gave me a positive direction like, it

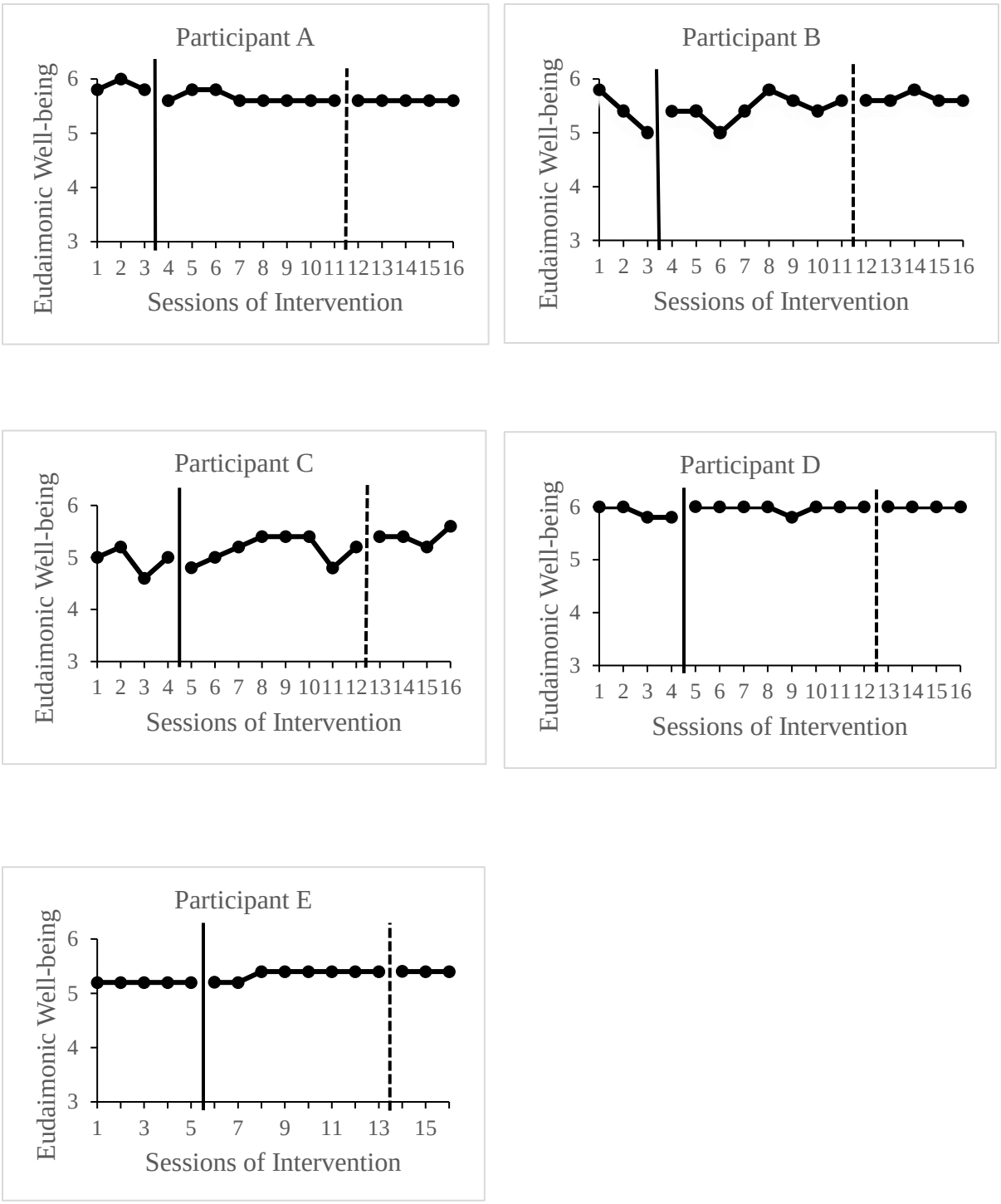

Figure 3. Graphed EWB data for Participants A, B, C, D, and E.
The solid vertical line on each graph indicates the point at which the intervention was implemented for that participant. The gradient vertical line on each graph indicates the point at which the post-intervention began.

gave me goals to set and like if I saw myself at to those goals like to push and work for them". Participant D shared, "It [imagery] helped me kind of like focus on even more attaining those [goals] and what I need to do, because I was kind of like organize my thoughts in a sense, like what I need to complete". Imagery use also helped as a reminder about goals: "It kind of just helps me to be reminded of not necessarily, directly achieve them, but remind me of what they are, and I guess what I need to do to get there?" (Participant E).

Self-acceptance through sport. In terms of self-acceptance through sport, four sub-categories emerged: acceptance of making mistakes in sport, positive attitude towards sport-self, feeling positive about past sport life, and self-awareness of strengths and weaknesses. Athletes recognized and discussed how imagery use helped make it easier to accept mistakes, overcoming them, and reminding themselves to move on. For example Participant B shared, "It kind of helped me when a mistake would happen, I would carry in myself 'It's okay, let's do this next time', like, just forget about it, and don't let anything else happen", while Participant D mentioned, "You take the ownership on that [mistake], and then you move on like keep going, that's what I keep reminding myself, when a mistake would happen in a game or practice 'Okay, it is what it is, move on"'. One example of how imagery influenced athletes having a positive attitude towards sport-self was: "It [imagery] was a positive reminder and it was like a good way of helping me to get where I needed to get, and it was a positive reinforcement and positive self-reflection" (Participant E). Participant B also said, "I feel like it [imagery] kind of helped me see myself of who I am as an athlete more", while Participant C mentioned, "It [imagery] makes you feel more positive…overall how I feel about as an athlete, about being an athlete". Participant A reported feeling positive about her past sport life in the following way: "It [imagery] just again made me feel that I have accomplished a lot in sport, and that I should be really proud about the

last five years playing soccer competitively". Furthermore, Participant C described that imagery use influenced her strengths as an athlete: "…it [imagery] gave me confidence in that I am more skilled at my sport, that sometimes I give myself credit for", while Participant A indicated that imagery helped her to realize what she does well and what she should value in soccer.

Apart from the strengths, athletes discussed the awareness of their weaknesses and the impact of imagery use on them: "...it [imagery] definitely made me go back and think about my weaknesses, and I think we all acknowledge our weaknesses but we don't often think about them, because we don't want to, we just kind of push them aside, so I think it forced me to bring weaknesses to the table, and maybe get better at them or want to get better in the future. Now, because I know them, I can think about them on a positive way" (Participant A).

Personal growth through sport. Two sub-categories emerged to describe athletes' personal growth, while using imagery: improvement/development, and further improvement/development. Participants discussed that imagery use helped them to recognize how much they have changed, improved, and developed throughout their soccer experience as competitive athletes. For instance, Participant D shared, "…I feel established, …I am just in a better place that I already know, I've just grown kind of thing, I don't know, I kind of get a sense I grow", while Participant E stated, "That one [script] helped to see how far I've come over the past four years. Um. And like I guess ya I have grown and developed and how my level of play has gotten a lot better". Moreover, athletes discussed imagery use's influence in identifying aspects that they want to further develop: "It [imagery] kind of get me a sense of reflecting on games, and like being able to see the areas that I need to improve like mentally and physically, in a game during different situations" (Participant B). She also mentioned, "… I'm improved from

first year to second year like I saw myself changed so now I can see myself changing more, push, keep improving".

Purpose in life, self-acceptance through life, and personal growth through life. Using imagery influenced aspects of well-being in other areas of the athletes' lives, particularly at school. Participant A discussed how imagery impacted both self-acceptance and personal growth through life: "I think overall my stress levels were lower I would say… At school definitely, I mean playing soccer in October when you have all your mid-terms and there are weeks that you are just swamped and there are definitely ways to handle your stress and you can always get sick because of stress and everything like, I think overall using imagery just gave me like a nice five minute break just like to appreciate what you are doing and what you are".

Further, purpose in life and personal growth through life were described by Participant D: "…it [imagery] was kind of like use it to prepare myself like in an exam for instance, um even if I didn't use a script necessarily but I knew basically what the script was, like it was in my mind, I was kind of going through things, 'Okay, what do I need to improve what I have studied', so I'm going through that versus obviously in a soccer sense, but no it helps, the most, the biggest thing that it helped for me, like relaxing myself and just like making me properly think through what I need to do… for school what was my goal, what was my job, what do I need to do. It [imagery] helped me in that respect for sure".

Resilience/Coping strategies. All the athletes indicated that imagery use helped them to be resilient and select coping strategies to deal with stressful and challenging situations in their sport. For instance, they described controlling their thoughts, regulating negative emotions, experiencing positive emotions, and being more focused. Participant A mentioned that imagery made her enjoy her sport and soccer experience. She also said, "I would go into games knowing

even if I made a mistake it was overcome, I could overcome it and again I was more calmed and maybe resilient in games because of it, because I knew I can bounce back from it". Moreover, Participant B mentioned: "…especially on making a mistake, I feel I improved my mental ability to be relaxed, and picture a better outcome, and then just work to continue playing", while Participant E shared, "… so we lost our semi-final game, the next day we have to play for bronze, we have to just forget it sort of thing. We do have something more important coming up kind of thing. So, it [imagery] was like a reminder that ya we sucked but I need to let it go in order to get myself ready to like preform for the next game".

Additionally, participants discussed how their confidence was influenced by imagery use: "…it [imagery] kind of pumped up like made you, I felt more confident going into the game" (Participant C). Participant A also stated, "I think it really helped me put into a perspective and helped me going into games as an athlete stronger because I wanted to do the best", while Participant E described: "I think it helped with my attitude and my confidence. I remember there was like one of the games, it was the first game that I scored my first goal of the season. Um, I remember there was a switch in my attitude, I felt like better about myself and, when I was playing it was a little bit, I don't know I felt like I had more of a presence on the field and then, when I identified that feeling I tried to carry it throughout the rest of my season. So, I guess it helped me in that way. Um ya with like my attitude and frame of mind".

Discussion

The purpose of the present study was to examine the impact of an imagery intervention on EWB in soccer players. It was hypothesized that the imagery intervention would enhance the athletes' EWB. The results from visual and statistical analyses provided partial support for the hypothesis; for two (Participants B and C) out of five participants there was a small increase in

their well-being. Given all athletes' responses on well-being during the baseline phase were very high (above 5), there may have been a ceiling effect operating. It is not surprising that athletes reported high well-being levels as they reported high psychological need satisfaction and intrinsic motivation, supporting self-determination theory's (SDT; Ryan & Deci, 2000) tenets that when the psychological needs are satisfied, an individual's motivation is self-determined (i.e., intrinsic motivation) resulting in enhanced well-being. Further, over the intervention period all athletes significantly increased their use of the five imagery functions, especially their use of the motivational functions, as well as their imagery ability. It seems that the participants preferred using MG-M, MG-A, and MS imagery as these functions involve aspects related to their well-being (e.g., feeling positive, confident, and focused, regulating emotions, and achieving goals).

Post-intervention interviews were conducted with the players to supplement the findings. All participants reported that imagery use had a positive impact on various aspects of EWB in sport (i.e., purpose in sport, self-acceptance through sport, and personal growth through sport), as well as for their lives in general (i.e., purpose in life, self-acceptance in life, and personal growth in life) indicating the effectiveness of the intervention. Athletes typically set goals as it gives them a sense of direction in their sport (Lundqvist & Sandin, 2014). The findings from the present study revealed that imagery helped the soccer players work on accomplishing their goals and enhanced the feeling that their sport life has meaning and purpose.

With respect to self-acceptance through sport, all participants reported that imagery influenced their ability to accept and maintain a positive attitude toward their sport-self. Specifically, Participants B and C mentioned that they can be really hard on themselves when they make a mistake, as they tend to replay it multiple times in their mind. Therefore, using

imagery helped them learn to accept mistakes, being aware of their strengths as well as their weaknesses, and feeling positive about their past sport life and themselves.

Imagery also contributed to athletes' personal growth as it gave them the opportunity to realize the extent to which they have developed and grown, and have the self-knowledge to approach their potential in their sport life. Having the feeling that they can grow as an athlete protects them from experiencing stagnation and losing interest in their sport. The current findings regarding EWB in sport provide support for the proposal by Morris (2010) that imagery can be used in every aspect of an athlete's life that has an impact on his/her well-being.

The influence of imagery on other aspects of life outside sport was also discussed by two athletes. More specifically, for Participants A and D imagery was the tool to regulate negative emotions and therefore benefit their EWB as university students. The effective implementation of imagery as part of various strategies to improve aspects of well-being in university student-athletes has been reported in previous research (Dubuc-Charbonneau & Durand-Bush, 2015; Golby & Wood, 2016). It should be noted that the dual role of being a competitive athlete and a university student seems to be extremely demanding and stressful, and may lead to burnout and reduced well-being (Gould & Whitley, 2009). The fact that players in the current study extended their imagery use to the university environment points that other areas of their lives require consideration.

Apart from the fact that imagery use was perceived as beneficial for athletes' well-being, at both sport-specific and general levels, participants' responses revealed the impact of imagery on other psychological aspects. All athletes reported that using imagery helped them to be resilient in the sport environment by using coping strategies. In other words, participants described their capacity to positively adapt in the face of stressful situations and challenges.

Ryff and Singer (2003) described resilience as “the capacity to flourish under fire” (p. 15) and stated that a resilient individual is able to maintain, recover, or improve his/her well-being following challenges. Based on this, various coping strategies are the protective factors to respond resiliently, and therefore enhance well-being.

The relationships between resilience, coping strategies and well-being in competitive sports have been observed in previous studies (Nezhad & Besharat, 2010; Nicholls, Levy, Carson, Thompson, & Perry, 2016). When athletes are exposed to a competitive environment with stressors, it is important that they employ effective strategies in order to protect their well-being (Surujlal, Van Zyl, & Nolan, 2013). In the present study, imagery was the path for soccer players to be mentally prepared and have the correct mindset that allowed them to bounce back from setbacks and challenges. According to the players, imagery was effective in thought control, emotion regulation, experiencing positive emotions, improved focus, and building and boosting confidence, which is in accordance with previous findings (e.g., Callow et al., 2001; Jones et al., 2002). These strategies contributed to athletes’ high well-being as they learned to maintain a sense of purpose and a positive attitude, and grow during stressful events such as important games.

Based on the imagery literature, there is a lack of interventions examining the effectiveness of imagery on athletes’ EWB. The current study was conducted to fill this gap using a single-subject multiple baseline design. While the interpretation of the visual and statistical analyses demonstrated a limited treatment effect, the use of a qualitative methodology provided in-depth information regarding how imagery influenced the players’ lives and how beneficial it was for their well-being. Another strength of this study was the use of a sport-specific well-being instrument (i.e., EWBSSS; Kouali et al., 2018) to measure athletes’ well-

being based on the eudaimonic perspective. Global measurement tools have been used to assess athletes' well-being and need for the development of a sport-specific measure has been highlighted (Lunqvist, 2011). The EWBSSS has been proven to be a suitable tool for use with competitive athletes comprising the main components of EWB in sport (Kouali et al., 2018). Additionally, the imagery scripts were provided to the players in an audio format which facilitated the athletes' practicing imagery as they could use the scripts anywhere and anytime.

The present study is not without limitations. All the participants had initial high well-being levels, and therefore a ceiling effect was evident making it difficult to demonstrate an intervention effect. The fact that the soccer team demonstrated an excellent performance record throughout the season may also have influenced the players' well-being during the study period. Future studies should deliver the imagery intervention to athletes with low well-being in order to examine whether positive treatment effects can be produced. Another limitation was that all five participants were female soccer players. Future research could employ an imagery intervention directed to enhancing the well-being of male soccer players. Moreover, it would be worthwhile to investigate whether an imagery intervention would have a positive impact on athletes' well-being during different stages of the competitive season (e.g., pre-season, off-season). It would also be interesting to examine if any differences exist between the well-being of athletes participating in individual versus team sports when they experience an imagery intervention.

The findings from the current study have implications for both coaches and practitioners working with competitive athletes. While competitive athletes dedicate a great amount of time to their sport, they still need to combine sport life with other aspects of their life (e.g., student life, social life). Imagery is a psychological tool that can be used to prepare individuals to cope and overcome various challenges effectively before they actually confront them in real life

(Orlick, 2008). Imagery interventions aimed at improving EWB should focus on having purposeful goals, accepting mistakes and difficulties in a positive way, being positive toward the self, and having a sense of continued growth by reaching one's potential. Therefore, athletes will be better able to experience sustained or enhanced well-being in any competitive and stressful context within and outside sport.

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Summary, Strengths, Limitations, Future Directions, and Implications

The purpose of this dissertation was to examine EWB in sport. Specifically, the studies that were conducted and included in this dissertation describe the development and validation of a sport-specific well-being measure, assess the association between different types of motivation and well-being in athletes, and determine the impact of an imagery intervention in enhancing athletes' well-being.

Study 1 aimed to create and validate an EWB instrument in the sport context (i.e., Eudaimonic Well-Being in Sport Scale), based on SDT and consisted of three phases. The purpose of Phase 1 was to create and determine the items that best represent EWB in sport. Of the initial 19 items that were created, 80% agreement was found for five items by a panel of five experts. In Phase 2, factorial validity and reliability scores were examined. Results indicated initial evidence for both factorial validity and internal consistency of the EWBSS. In Phase 3, further psychometric testing of the five item EWBSS with two independent samples, competitive athletes and recreational athletes, ensued. The findings provided further evidence for the validity and reliability of the EWBSS in competitive athletes. Partial support for the psychometric properties of the EWBSS was provided in recreational athletes. The development of the EWBSS provides researchers with an instrument to assess athletes' well-being and to further examine its relationship with various SDT constructs.

Study 2 examined the relationship between different forms of motivation, as proposed in SDT, and athletes' EWB. The association between motivation and EWB was assessed using a latent variable model. Results indicated that integrated and identified regulations positively predicted athletes' EWB. External regulation was also a positive predictor of EWB, while introjected regulation and amotivation negatively predicted athletes' EWB. Finally, athletes'

intrinsic motivation did not significantly predict their EWB. The findings from this study highlight the complex link between different types of sport motivation and athletes' well-being. Athletes, as with all individuals, have multiple motivations for their behaviors (Ryan & Deci, 2017). Given the competitive environment (e.g., difficult, repetitive training) athletes may not always have autonomous types of motivation, and there are situations where extrinsic motivational regulations may impact effectively on athletes' behavior (Taylor, 2015).

The purpose of Study 3 was to examine the effectiveness of an imagery intervention on the EWB of five soccer players using a single-subject multiple baseline design. Visual and statistical analyses demonstrated a small increase on EWB for two participants. However, post-intervention interviews revealed that all the players believed the intervention was beneficial and had a positive impact on their well-being at both sport-specific and general levels. These findings underline the utility of employing imagery interventions for enhancing athletes' well-being in various contexts within and outside sport.

Given the lack of sport-specific measurement tools of well-being, the findings of this research contribute to filling this gap within the sport literature. Researchers have been assessing EWB in sport by using a global measure of well-being (SPWB; Ryff, 1989) or by using multiple measures targeting different aspects of EWB (e.g., SVS; Ryan & Frederick, 1997). The development of the EWBSS in Study 1 helps to provide researchers with a short, simple instrument that encompasses the main components of EWB and can be easily administered to athletes multiple times, without adding burden to them.

Investigating the relationship between each type of motivation individually and EWB in sport is a strength of Study 2. Various researchers have used a single score of self-determination (SDI or RAI) to represent motivation (e.g., Stenling, Lindwall, & Hassmén, 2015). In the

present research, the assessment of motivation as a multidimensional construct and the use of the EWBSS further extends previous SDT research examining this association specifically within the sport context. Interesting findings were found for external regulation as a positive predictor of athletes' well-being, which is in contrast to SDT tenets, indicating that extrinsic motivation does not always have detrimental effects on well-being.

In sport psychology research, PST programs have been conducted, with imagery being combined with other psychological tools (e.g., self-talk, relaxation, concentration) and these programs have been shown to have a positive impact on psychological outcomes in athletes' lives, including aspects of well-being (e.g., Edwards & Steyn, 2008, Golby & Wood, 2016; Sheard & Golby, 2006). Based on this, the absence of interventions specifically investigating the effectiveness of imagery on athletes' EWB was noted, and therefore Study 3 filled this gap within the sport literature. The use of the EWBSS as a eudaimonic measure specifically in the sport context is another strength of Study 3. Considering the multiple stressors athletes encounter that may diminish their well-being due to the competitive sport environment, it is highly important for researchers to employ sport-specific instruments, instead of global measures in order to assess athletes' well-being levels (Lundqvist, 2011). Furthermore, conducting individual interviews with each athlete at the post-intervention phase in Study 3 provided more in-depth information about athletes' overall experience using imagery and the positive impact of imagery on their well-being. The fact that the influence of imagery use was extended on other areas of life outside sport, as well as on other psychological aspects that enhance well-being, adds to the imagery literature.

The present dissertation is not without limitations. In terms of Study 1, athletes were categorized only as competitive and recreational without identifying specific levels of

competitive athletes. Future researchers may want to consider employing the EWBSS with different competitive level athletes to provide support as to whether it is a suitable measurement tool for all competitive athletes. It would be worthwhile for scholars to compare various samples of athletes (e.g., individual versus team sports, different age groups, male versus female athletes) and determine if they exhibit differences in their well-being levels. In regards to the process of validating the EWBSS, only two types of validity (i.e., convergent and nomological) were tested. Given that the EWBSS is a new instrument, further psychometric testing is warranted. Researchers should continue testing other types of validity (e.g., criterion-related) as well as examining the test-retest reliability of the EWBSS.

The cross-sectional design and the self-reported measures that were used in Study 2 is another limitation. The use of a longitudinal design by examining the relationship between different forms of motivation and well-being during each stage of the competitive season (i.e., pre-season, early season, mid-season, late season, off-season), the inclusion of physiological and observational measurements, and the use of a qualitative methodology should be considered as avenues for future research in providing more insight about this association. In addition, the impact of other constructs of SDT such as the basic psychological needs and social factors (e.g., coach's behavior) on the sport motivation-well-being relationship appears to be worthy of further study.

The athletes' characteristics (i.e., female soccer players) and the initial high well-being could be considered as limitations of Study 3. Scholars should focus on employing imagery interventions in both male and female athletes with diminished well-being levels, during different competitive stages, and from different individual and team sports, in order to determine

if well-being varies with gender, stage of competitive season, and type of sport following an imagery intervention.

Overall the findings from this research have practical implications for coaches and practitioners. Considering that the EWBSS is a short measurement tool, both coaches and sport psychology consultants can use it to assess their athletes' well-being during different times of the competitive season without adding burden on them. Furthermore, sport psychology consultants should design imagery interventions aimed at enhancing athletes' well-being within and outside sport and motivational constructs (e.g., basic psychological needs, autonomous types of motivation) should be considered as potential mechanisms in linking imagery and well-being. In addition to this, imagery use could be very beneficial when athletes confront various challenges and stressful situations (e.g., an upcoming competition). That is, athletes can use imagery as a tool to employ effective coping strategies, be resilient, and therefore maintain or enhance their well-being in their sport life, but also in other aspects such as their student life (Morris, 2010).

The EWBSS was developed to represent eudaimonic aspects as indicators of optimal functioning and experience in the sport context. However, recently Ryan and Deci (2017) used the term of thriving to describe full functioning by including two main components: a eudaimonic component (i.e., vitality) and a performance component (i.e., exercise of one's human capacities). Similarly, Brown and colleagues (Brown, Arnold, Reid, & Roberts, 2018; Brown, Arnold, Standage, & Fletcher, 2017) investigated thriving in sport and suggested that the experience of thriving incorporates some similar characteristics with the experience of EWB and eudaimonic living (which align with SDT) combined with aspects of athletic performance. More specifically, thriving was described as the experience of both high-level of well-being and perceived high-level of performance following adversity or successful events. Therefore, future

research should consider incorporating the dimension of subjective performance together with the EWBSS in order to capture a more holistic view of being fully functioning in sport, instead of using separate measures to assess well-being and performance (Brown et al., 2017).

Given that SWB usually accompanies or follows from eudaimonic living as individuals tend to report they are happier when they are fully functioning (Ryan & Deci, 2017) researchers are also encouraged to develop a sport-specific well-being measurement tool focusing on athletes' SBW (i.e., presence of positive affect and absence of negative affect combined with satisfaction in sport life). The assessment of both subjective and eudaimonic well-being may provide a better understanding of what constitutes optimal psychological functioning in the sport context.

In conclusion, this dissertation provides insight to EWB in the sport context. The development of a sport-specific well-being measure is an initial step in encouraging researchers to further examine well-being in sport. It also indicates that further research is warranted investigating the effectiveness of imagery use in enhancing athletes' well-being and their overall sport experience.

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Appendices

APPENDIX A

Questionnaire for Experts

(Study 1: Phase1)

Please, select the items that best represent Eudaimonic Well-Being in Sport

1. As an athlete, I feel that I continue to learn more about myself.
2. I am the kind of athlete who likes to try new things.
3. It is important to try new sport experiences that challenge how I think about myself.
4. I have gained a lot of insight about life through sport.
5. I have developed a lot as a person through sport.
6. For me, sport has been a continuous process of personal growth.
7. I enjoy seeing how my views as an athlete have matured.
8. I think of what I hope to do in the future as an athlete.
9. I have a sense of direction in sport.
10. I enjoy planning my future in sport.
11. As an athlete I carry out the plans I set for myself.
12. My goals in sport have been a source of satisfaction.
13. I think about what I have accomplished in sport.
14. As an athlete, I am pleased with how things have turned out.
15. In general, I feel positive about myself as an athlete.
16. I like most aspects of myself as an athlete.
17. I made some mistakes in sport, but I feel overall everything has worked out for the best.
18. I am proud of the life I lead in sport.
19. When I compare myself to others in sport, I feel good about who I am as an athlete.

APPENDIX B

Demographic Questionnaire

(Study 1 [Phase 2, Phase 3] and Study 2)

The following set of questions are designed to gain an understanding of your background characteristics as an athlete. There are no right or wrong answers, so please answer as openly and honestly as possible.

1. Your age: _____

2. Gender: _____

3. Your major sport: _____

4. How many years have you participated in this sport? _____years

5. How many hours do you practice a week? _____hours

6. What is your competitive level?
- Recreational
- Club
- Varsity
- Regional
- Provincial
- National
- International

7. How do you identify your ethnicity?

_____

8. Which stage of the competitive season of your major sport are you currently in?
- Pre-season
- Early season
- Mid season
- Late season
- Off-season

9. Do you currently have a coach?
- Yes
- No

APPENDIX C

Eudaimonic Well-Being in Sport Scale

(Study 1, Study 2, and Study 3)

The following set of questions deals with how you feel about yourself and your life as an athlete. Please remember that there are no right or wrong answers.

Circle the number that best describes your present agreement or disagreement with each statement.	**Strongly Disagree**	**Disagree Somewhat**	**Disagree Slightly**	**Agree Slightly**	**Agree Somewhat**	**Strongly Agree**
1. As an athlete, I feel that I continue to learn more about myself.	**1**	**2**	**3**	**4**	**5**	**6**
2. I have a sense of direction in sport.	**1**	**2**	**3**	**4**	**5**	**6**
3. In general, I feel positive about myself as an athlete.	**1**	**2**	**3**	**4**	**5**	**6**
4. I like most aspects of myself as an athlete.	**1**	**2**	**3**	**4**	**5**	**6**
5. My goals in sport have been a source of satisfaction.	**1**	**2**	**3**	**4**	**5**	**6**

APPENDIX D

Behavioral Regulation in Sport Questionnaire

(Study 1 [Phase 3], Study 2, and Study 3)

Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements is for you. When deciding if this is one of the reasons why you participate, please think about all the reasons why you participate. There are no right or wrong answers, so do not spend too much time on any one question and please answer as honestly as you can. Some items may appear similar but please respond to all the statements by circling the number under the most appropriate heading.

I participate in my sport…

		Not at all True			Somewhat True			Very True
1	because I enjoy it.	1	2	3	4	5	6	7
2	because it's a part of who I am.	1	2	3	4	5	6	7
3	because it's an opportunity to just be who I am.	1	2	3	4	5	6	7
4	because I would feel ashamed if I quit.	1	2	3	4	5	6	7
5	but the reasons why are not clear to me anymore.	1	2	3	4	5	6	7
6	because I would feel like a failure if I quit.	1	2	3	4	5	6	7
7	but I wonder what's the point.	1	2	3	4	5	6	7
8	because what I do in sport is an expression of who I am.	1	2	3	4	5	6	7
9	because the benefits of sport are important to me.	1	2	3	4	5	6	7
10	because if I don't other people will not be pleased with me.	1	2	3	4	5	6	7
11	because I like it.	1	2	3	4	5	6	7
12	because I feel obligated to continue.	1	2	3	4	5	6	7
13	but I question why I continue.	1	2	3	4	5	6	7
14	because I feel pressure from other people to play.	1	2	3	4	5	6	7
15	because people push me to play.	1	2	3	4	5	6	7
16	because it's fun.	1	2	3	4	5	6	7
17	because it teaches me self-discipline.	1	2	3	4	5	6	7
18	because I would feel guilty if I quit.	1	2	3	4	5	6	7
19	because I find it pleasurable.	1	2	3	4	5	6	7
20	because I value the benefits of my sport.	1	2	3	4	5	6	7
21	but I question why I am putting myself through this.	1	2	3	4	5	6	7
22	because it is a good way to learn things which could be useful to me in my life.	1	2	3	4	5	6	7
23	in order to satisfy people who want me to play.	1	2	3	4	5	6	7
24	because it allows me to live in a way that is true to my values.	1	2	3	4	5	6	7

APPENDIX E

Subjective Vitality Scale

(Study 1: Phase 3)

Please respond to each of the following statements by indicating the degree to which the statement is true for <u>your life as an athlete.</u>

	Not at all true			**Somewhat true**			**Very true**
1. I feel alive and vital.	1	2	3	4	5	6	7
2. Sometimes I feel so alive I just want to burst.	1	2	3	4	5	6	7
3. I have energy and spirit.	1	2	3	4	5	6	7
4. I look forward to each new day.	1	2	3	4	5	6	7
5. I nearly always feel alert and awake.	1	2	3	4	5	6	7
6. I feel energized.	1	2	3	4	5	6	7

APPENDIX F

Demographic Questionnaire

(Study 3)

The following set of questions are designed to gain an understanding of your background characteristics as an athlete. There are no right or wrong answers, so please answer as openly and honestly as possible.

1. Your age: _____
2. Gender: _____
3. How do you identify your ethnicity? _____
4. How many years have you participated in this sport? _____years
5. How many hours do you practice a week? _____hours
6. What soccer position are you? _____

APPENDIX G

Vividness of Movement Imagery Questionnaire-2

(Study 3)

Movement imagery refers to the ability to imagine a movement. The aim of this questionnaire is to determine the vividness of your movement imagery. The items of the questionnaire are designed to bring certain images to your mind.

You are asked to rate the vividness of each item by reference to the 5-point scale. After each item, circle the appropriate number in the boxes provided. The first column is for an image obtained watching yourself performing the movement from an external point of view (External Visual Imagery), and the second column is for an image obtained from an internal point of view, as if you were looking out through your own eyes whilst performing the movement (Internal Visual Imagery). The third column is for an image obtained by feeling yourself do the movement (Kinaesthetic imagery).

Try to do each item separately, independently of how you may have done other items. Complete all items from an external visual perspective and then return to the beginning of the questionnaire and complete all of the items from an internal visual perspective, and finally return to the beginning of the questionnaire and complete the items while feeling the movement. The three ratings for a given item may not in all cases be the same. For all items please have your eyes CLOSED.

Think of each of the following acts that appear on the next page, and classify the images according to the degree of clearness and vividness as shown on the RATING SCALE.

RATING SCALE. The image aroused by each item might be:

No image at all, you only "know" that you are thinking of the skill	……RATING 1
Vague and dim	……RATING 2
Moderately clear and vivid	……..….RATING 3
Clear and reasonably vivid	……...RATING 4
Perfectly clear and as vivid (as normal vision or feel of movement)	……RATING 5

	Watching yourself performing the movement (External Visual Imagery)					Looking through your own eyes whilst performing the movement (Internal Visual Imagery)					Feeling yourself do the movement (Kinaesthetic Imagery)				
Item	No image at all, you only know that you are thinking of the skill	Vague and dim	Moderately clear and vivid	Clear and reasonably vivid	Perfectly clear and vivid as normal vision	No image at all, you only know that you are thinking of the skill	Vague and dim	Moderately clear and vivid	Clear and reasonably vivid	Perfectly clear and vivid as normal vision	No image at all, you only know that you are thinking of the skill	Vague and dim	Moderately clear and vivid	Clear and reasonably vivid	Perfectly clear and vivid as normal feel of movement
1. Walking	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
2. Running	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
3. Kicking a stone	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
4. Bending to pick up a coin	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
5. Running up stairs	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
6. Jumping sideways	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
7. Throwing a stone into water	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
8. Kicking a ball in the air	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
9. Running downhill	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
10. Riding a bike	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
11. Swinging on a rope	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
12. Jumping off a high wall	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

APPENDIX H

Sport Imagery Questionnaire
(Study 3)

Athletes use mental imagery extensively in their training and conjunction with competition. Imagery serves two functions. The motivational function of imagery can represent emotion-arousing situations (i.e., anxiety) as well as specific goals (i.e. scoring a goal) and goal-orientated behaviors (i.e., confidence). The cognitive function entails the mental rehearsal of skills (i.e. body positioning) and strategies of play (i.e., offensive play). This questionnaire was designed to assess the extent to which you are incorporating imagery into your sport. Any statement depicting a function of imagery you rarely use should be given a low rating. In contrast, any statement describing a function of imagery you use frequently should be given a high rating. Your ratings will be made on a seven- point scale, where 1 = rarely or never engage in that kind of imagery and 7 = often engage in that kind of imagery. Read each statement below and fill in the blank with the appropriate number from the scale provided to indicate the degree to which the statement applies to you when you are practicing or competing in your sport. Don't be concerned about using the same numbers repeatedly if you feel they represent your true feelings. Remember that there are no right or wrong answers, so please answer as accurately as possible.

	Rarely or never engage in that kind of imagery.						**Often engage in that kind of imagery**
1. I make up new plans/strategies in my head.	1	2	3	4	5	6	7
2. I image the atmosphere of winning a championship (e.g., the excitement that follows winning a championship).	1	2	3	4	5	6	7
3. I image giving 100%.	1	2	3	4	5	6	7
4. I can consistently control the image of a physical skill.	1	2	3	4	5	6	7
5. I imagine the emotions I feel while doing my sport.	1	2	3	4	5	6	7
6. I imagine my skills improving.	1	2	3	4	5	6	7

	Rarely or never engage in that kind of imagery.						**Often engage in that kind of imagery**
7. I imagine alternative strategies in case my event/game plan fails.	1	2	3	4	5	6	7
8. I imagine myself handling the arousal and excitement associated with my sport.	1	2	3	4	5	6	7
9. I imagine myself appearing self-confident in front of my opponents.	1	2	3	4	5	6	7
10. I imagine other athletes congratulating me on a good performance.	1	2	3	4	5	6	7
11. I imagine each section of an event/game (e.g., offense vs. defense, fast vs. slow).	1	2	3	4	5	6	7
12. I imagine myself being in control in difficult situations.	1	2	3	4	5	6	7
13. I can easily change the image of a skill.	1	2	3	4	5	6	7
14. I image others applauding my performance.	1	2	3	4	5	6	7
15. When imaging a particular skill, I consistently perform it perfectly in my mind.	1	2	3	4	5	6	7
16. I image myself winning a medal.	1	2	3	4	5	6	7
17. I image the stress and anxiety associated with my sport.	1	2	3	4	5	6	7
18. I image myself continuing with my game/event plan, even when performing poorly.	1	2	3	4	5	6	7
19. When I image myself performing, I feel myself getting psyched up.	1	2	3	4	5	6	7
20. I can mentally make corrections to physical skills.	1	2	3	4	5	6	7
21. I imagine entire plays/programs/sections just the way I want them to happen in an event/game.	1	2	3	4	5	6	7

	Rarely or never engage in that kind of imagery.						**Often engage in that kind of imagery**
22. Before attempting a particular skill, I imagine myself performing it perfectly.	1	2	3	4	5	6	7
23. I imagine myself being mentally tough.	1	2	3	4	5	6	7
24. When I image myself participating in sport, I feel anxious.	1	2	3	4	5	6	7
25. I imagine the excitement associated with performing.	1	2	3	4	5	6	7
26. I image myself being interviewed as a champion.	1	2	3	4	5	6	7
27. I image myself being focused during a challenging situation.	1	2	3	4	5	6	7
28. When learning a new skill, I imagine performing it perfectly.	1	2	3	4	5	6	7
29. I imagine myself successfully following my game/event plan.	1	2	3	4	5	6	7
30. I image myself working successfully through tough situations (e.g., a player short, sore ankle, etc.)	1	2	3	4	5	6	7

APPENDIX I

The Basic Needs Satisfaction in Sport Scale
(Study 3)

Below are some sentences that describe personal feelings or experiences athletes might have in their sport. Using the scale provided, please indicate how true each of the phrases are to you. There are no right or wrong answers, so do not spend too much time on any single question. You will only need to answer the questions honestly. Some items may appear similar but please respond to all the statements.

		Not at all true					**Somewhat true**	**Very true**
1	In my sport, I feel close to other people.	1	2	3	4	5	6	7
2	In my sport, I feel I am pursuing goals that are my own.	1	2	3	4	5	6	7
3	I feel I participate in my sport willingly.	1	2	3	4	5	6	7
4	In my sport, I get opportunities to make choices.	1	2	3	4	5	6	7
5	In my sport, I feel that I am being forced to do things that I don't want to do.	1	2	3	4	5	6	7
6	I can overcome challenges in my sport.	1	2	3	4	5	6	7
7	I show concern for others in my sport.	1	2	3	4	5	6	7
8	I choose to participate in my sport according to my own free will.	1	2	3	4	5	6	7
9	In my sport, I have a say in how things are done.	1	2	3	4	5	6	7
10	There are people in my sport who care about me.	1	2	3	4	5	6	7
11	I am skilled at my sport.	1	2	3	4	5	6	7
12	I feel I am good at my sport.	1	2	3	4	5	6	7
13	In my sport, I can take part in decision making process.	1	2	3	4	5	6	7
14	I get opportunities to feel that I am good at my sport.	1	2	3	4	5	6	7
15	In my sport, I really have a sense of wanting to be there.	1	2	3	4	5	6	7
16	In my sport, I feel I am doing what I want to be doing.	1	2	3	4	5	6	7
17	I have the ability to perform well in my sport.	1	2	3	4	5	6	7
18	In my sport, there are people who I can trust.	1	2	3	4	5	6	7
19	I have close relationships with people in my sport.	1	2	3	4	5	6	7
20	In my sport, I get opportunities to make decisions.	1	2	3	4	5	6	7

APPENDIX J

Imagery Diaries

(Study 3)

Imagery Diary

Week between ____ and ____ Of ____________________

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Imagery Today ☐	Imagery Today ☐	Imagery Today ☐	Imagery Today ☐	Imagery Today ☐	Imagery Today ☐	Imagery Today ☐
Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐	Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐	Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐	Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐	Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐	Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐	Situation of your Imagery: Really hard ☐ Hard ☐ So-so ☐ Easy ☐ Really easy ☐
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:

APPENDIX K

Imagery Scripts

(Study 3)

Imagery Script 1

Imagine a goal that you have set and really want to achieve by the end of the competitive season. [pause] Imagine what you need to accomplish this goal. [pause] Imagine yourself planning the procedure to achieve the goal. [pause] Imagine yourself writing down all the steps that you need to follow and feel determined that you are going to make it because you know what you want. [pause] Now see yourself at the field working hard on what you need to improve during training. [pause] You hear your coach's corrections. [pause] You feel tired, you are sweating, and feel the pain of your muscles. [pause] Keep trying and remind yourself that you are committed to your goal. [pause] Hear your teammates encouraging you. [pause] Now see yourself progressively improving. [pause] Hear your coach applauding your improvement. [pause] Feel satisfied in the effort you put in. [pause] Picture yourself celebrating your achievement.

Imagery Script 2

Recall a difficult situation in which your performance was poor. [pause] Re-create that situation in your head and remember how you were feeling and the thoughts going through your mind. [pause] You remember yourself making a mistake and start feeling anxious, losing focus and control. [pause] You feel disappointed and upset. [pause] You begin to worry about what your teammates and the audience will think about this mistake. [pause] Now clear your mind and imagine yourself again back in this difficult situation. [pause] You made a mistake but you know that you have to accept it. [pause] Take a deep breath and let it go… [pause] Remind yourself that you are a great player, you have worked really hard, and you deserve to play in this team. [pause] Now see yourself being concentrated and remaining focused and positive during the rest of the game. [pause] Hear your coach and your teammates encouraging you. [pause] See yourself being in control and feeling confident. [pause] See yourself giving your full effort and feeling energetic. [pause] Feel proud of yourself overcoming the challenge and doing your best.

Imagery script 3

Think back at the first year you entered the team. [pause] Remember the way you were performing, your behavior, your attitude, how you were feeling, and the thoughts that you had. [pause] See yourself how you were performing under pressure. [pause] Think of how you could control your emotions when you made a mistake. [pause] Think of how you handled a difficult situation. [pause] Think of how you behaved towards your teammates. [pause] Now imagine yourself at the present being a member of the team. [pause] Imagine how you look, how you perform, how you behave, think, and feel. [pause] Now have your "present self" meet your "past self". [pause] Look at the two figures. [pause] Do the two selves look the same? [pause] Do they perform the same? [pause] Do they behave the same? [pause] Do they feel and think the same things? [pause] Think of what is different and what has changed. [pause] Now see and listen your "present self" explaining to the "past self" how you have been improved. [pause] What different attitudes and behaviors have you developed?

Imagery script 4

Imagine that you are at the end of the competitive season. [pause] You are at the meeting room together with your teammates and your coach. [pause] You hear your coach asking you to evaluate the competitive season by writing down your thoughts. [pause] Remember the games you performed well and the games your performance was poor. [pause] Remember the days you worked really hard during training and the days that you did not push yourself. [pause] You have made mistakes during the season but you know that you are a capable player with a lot of positive aspects and strengths. [pause] Now think of the goals that you have set throughout the season. [pause] Did you achieve your goals? [pause] Think of all the things you have done to accomplish these goals. [pause] Now think of how you have been developed this year. [pause] What did you improve? [pause] Now you hear your coach applauding and congratulating all the players. [pause] Feel satisfied with yourself as being a member of this team throughout the season.

APPENDIX L

Interview Guide

(Study 3)

A. 1. Did you notice any difference about yourself as an athlete since you started using imagery?

2. What was the difference?

3. In what aspects of your life as an athlete did imagery use have an impact?

B. 1. How did imagery use influence your goals and direction in soccer?

2. How did imagery use influence your ability to handle situations that you performed poorly/made mistakes?

3. How did imagery use influence the way you feel about different aspects of yourself as an athlete?

4. How did imagery use influence your strengths as an athlete?

5. How did imagery use influence your weaknesses as an athlete?

C. 1. How did imagery use influence your ability to identify aspects that you have developed/improved?

2. How did imagery use influence your ability to identify aspects that you want to further develop/improve?

E. 1. How would you describe and evaluate your overall experience practicing imagery?

2. How beneficial do you believe imagery use was for your well-being?

3. Describe the positive and negative impacts on your well-being.

4. Describe any influence that imagery may have on your performance.

5. Describe any influence that imagery may have on other areas of your life (e.g., school).

6. In what situations do you believe you may keep using imagery in the future?

APPENDIX M

Letters of Information and Consent Forms

Letter of Information

(Study 1: Phase 1)

Project Title: Examining Well-Being in Sport

Principal Investigator: Craig Hall, PhD, Western University

1. **Invitation to Participate**
   You are being invited to participate in a study titled "Examining Well-Being in Sport".

2. **Purpose of the Letter**
   The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research.

3. **Purpose of this Study**
   The purpose of this study is to determine the items that best represent eudaimonic well-being in sport. We are recruiting a judging panel of 5 experts who had published articles related to self-determination theory (SDT) and eudaimonic well-being within the sport context. and were currently conducting research on either/both areas to select the items that best represent eudaimonic well-being in sport.

4. **Inclusion Criteria**
   In order to be eligible to participate in the study, participants must be over the age of 18, and be experts who have published multiple articles involving SDT as the driving framework and have published multiple articles involving eudaimonic well-being within the sport context, and are currently conducting research on either/both areas.

5. **Exclusion Criteria**
   Participants will be excluded from the study if they are under the age of 18 or not experts of SDT or eudaimonic well-being.

6. **Study Procedures**
   If you agree to participate, involvement in this study will entail completing an online questionnaire which will take approximately 20-30 minutes to complete.

7. **Possible Risks and Harms**
   There are no known or anticipated risks or discomforts associated with participating in this study.

8. **Possible Benefits**
   You may not directly benefit from participating in this study but the information gathered from this study may provide researchers with further information regarding the assessment of eudaimonic well-being in the sport context.

9. Compensation

You will not be compensated for your participation in this research.

10. Voluntary Participation

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time with no effect on your academic status.

11. Confidentiality

All data collected will remain confidential and accessible only to the investigators of the study. Considering that the data is anonymous, after you have completed and exited the survey, you will be unable to withdraw from the study, as we will have no way of identifying the information that you provided. However, if you wish to leave a question blank, or terminate your involvement in the study while you are completing it, you may do so without any penalty. Your data, will be stored in a password-protected computer that can only be accessed by the investigators and will be destroyed after five years.

12. Contacts for Further Information

If you require any further information regarding this research project or your participation in the study you may contact Despina Kouali. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics. Representatives of Western University's Non-Medical Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research.

13. Publication

If the results of the study are published, your name will not be used. If you would like to receive a copy of any potential study results, please contact Despina Kouali.

14. Consent

Completion of this online survey indicates your consent to participate.

Thank you!

Principal Investigator:	Co-investigator:
Dr. Craig Hall Professor, School of Kinesiology, Western University	Despina Kouali PhD student, School of Kinesiology, Western University

This letter is yours to keep for future reference.

Western

Letter of Information and Consent

(Study 1: Phase 2)

Project Title: Validation of Eudaimonic Well-Being in Sport Scale
Document Title: Letter of Information and Consent – Athlete

Principal Investigator + Contact:
Craig Hall, PhD, Western University

1. **Invitation to Participate**
   You are being invited to participate in this research study about examining the validation of the Eudaimonic Well-Being in Sport Scale. You, as a competitive athlete are being asked to participate, as your sporting life has an impact on your mental well-being.

2. **Why is this study being done?**
   SDT postulates that autonomy, competence, and relatedness are the essential factors that foster well-being (Deci & Ryan, 2001). Accordingly, the more the individual basic needs are satisfied the more one's levels of self-determined motivation may increase, and hence lead to enhanced well-being (Deci & Ryan, 2000, 2001). Research on athletes' well-being is limited (Lundqvist, 2011). Notwithstanding, the studies investigating well-being in sport have not distinguished between global (general) well-being and well-being specific to the sport context.
   Since there is lack of measurements for assessing athletes' well-being in the sport context (Lundqvist, 2011), the purpose of the present study is to examine the validity of the Eudaimonic Well-Being in Sport Scale.

3. **How long will you be in this study?**
   It is expected that you will be in the study approximately for 15 minutes.

4. **What are the study procedures?**
   If you agree to participate you will be asked to complete an online questionnaire or a questionnaire using paper and pencil, before or after practice. The

questionnaire will include two sections: a demographics questionnaire and the Eudaimonic Well-Being in Sport Scale.

5. **What are the risks and harms of participating in this study?**
   There are no known or anticipated risks or discomforts associated with participating in this study.

6. **What are the benefits of participating in this study?**
   You may not directly benefit from participating in this study but the information gathered from this study may provide researchers with further information regarding a measurement for assessing competitive athletes' well-being on a contextual level.

7. **Can participants choose to leave the study?**
   If you decide to withdraw from the study, you have the right to request withdrawal of information collected about you. If you wish to have your information removed please let the researcher know.

8. **How will participants' information be kept confidential?**
   No personal identifiers will be collected in this study, therefore data provided by the participants will remain anonymous, and will be kept confidential and accessible only to the investigators of the study. While we do our best to protect your information there is no guarantee that we will be able to do so. If data is collected during the project which may be required to report by law we have a duty to report. The investigators will store the study data both in electronic and paper files. Electronic files will be stored on a University local hard drive, and password protected devices (i.e., laptop, and memory stick). The paper files will be stored in a locked cabinet in a secured room at Western premises. All data will be destroyed after five years. If the results of the study are published, your name will not be used.

9. **Are participants compensated to be in this study?**
   You will not be compensated for your participation in this research.

10. **What are the rights of participants?**
    Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your academic standing.

We will give you new information that is learned during the study that might affect your decision to stay in the study.
You do not waive any legal right by signing this consent form.

11. Whom do participants contact for questions?

If you have questions about this research study please contact the Principal Investigator Dr. Craig Hall or the Co-Investigator Despina. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics.

12. Consent

You indicate your voluntary agreement to participate by responding to the questionnaire.

This letter is yours to keep for future reference.

Western

Letter of Information and Consent

(Study 1: Phase 3)

Project Title: Validation of the Eudaimonic Well-Being in Sport Scale

Document Title: Letter of Information and Consent – Student

Principal Investigator + Contact:
Craig Hall, PhD, Western University

13. Invitation to Participate

You are being invited to participate in this research study about examining the validation of the Eudaimonic Well-Being in Sport Scale. You, as an athlete are being asked to participate, as your sporting life has an impact on your well-being.

14. Why is this study being done?

It is widely accepted that physical activity and participation in sport is linked to various physiological and psychological benefits (e.g., Quested & Duda, 2010; Reinboth, Duda, & Ntoumanis; 2004), including but not limited to health-related behaviors, cognitive development, enhanced self-confidence and self-esteem, high energy and vitality, and lower risk of depression. Sport provides opportunities for athletes to experience psychosocial development, thus promoting psychological well-being (Adie, Duda, & Ntoumanis, 2012). In the sport literature, the majority of studies have failed to distinguish between general well-being and well-being specific to the sport context despite the established relationship between sport participation and well-being (for a review see Lundqvist, 2011). The lack of an instrument for assessing athletes' well-being in the sport context has been highlighted (Galloway, Bell, Hamilton & Scullion, 2006).

Given the lack of measures of psychological (i.e., eudaimonic) well-being specific to sport, Kouali, Hall, and Pope developed a measure of well-being for the sport context. Five items were finalized to represent well-being in sport as a single measure, termed the Eudaimonic Well-Being in Sport Scale (EWBSS). Therefore, the purpose of the present study is to examine the validity of the EWBSS.

15. How long will you be in this study?

It is expected that you will be in the study approximately for 10-15 minutes.

16. What are the study procedures?

If you agree to participate you will be asked to complete a questionnaire using paper and pencil, at the end of the class. The questionnaire will include: a demographics questionnaire, the Eudaimonic Well-Being in Sport Scale, the Subjective Vitality Scale (SVS; Ryan & Frederick,1997), and the Behavioral Regulations in Sport Questionnaire (BRSQ; Londale, Hodge, & Rose, 2008).

17. What are the risks and harms of participating in this study?

There are no known or anticipated risks or discomforts associated with participating in this study.

18. What are the benefits of participating in this study?

You may not directly benefit from participating in this study but the information gathered from this study may provide researchers with further information regarding an instrument for assessing athletes' well-being in the sport context.

19. Can participants choose to leave the study?

If you decide to withdraw from the study, the information that was collected prior to you leaving the study will still be used as it will be anonymous. No new information will be collected without your permission.

20. How will participants' information be kept confidential?

Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. No personal identifiers will be collected in this study, therefore data provided by the participants will remain anonymous, and will be kept confidential and accessible only to the investigators of the study. The investigators will store the study data both in electronic and paper files. Electronic files will be stored on a University local hard drive, and password protected devices (i.e., laptop, and memory stick). The paper files will be stored in a locked cabinet in a secured room at Western premises. All data will be destroyed after five years. If the results of the study are published, your name will not be used.

21. Are participants compensated to be in this study?

You will not be compensated for your participation in this research.

22. What are the rights of participants?

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your academic standing.

You do not waive any legal right by consent to this study.

23. Whom do participants contact for questions?

If you have questions about this research study please contact the Principal Investigator Dr. Craig Hall or the Co-Investigator Despina Kouali. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics.

24. Consent

You indicate your voluntary agreement to participate by responding to the questionnaire.

This letter is yours to keep for future reference.

Western

Letter of Information and Consent

(Study 2)

Project Title: Examining the Relationship between Motivation and Well-Being in Sport
Document Title: Letter of Information and Consent – Athlete

Principal Investigator + Contact:
Craig Hall, PhD, Western University

Additional Research Staff + Contact:

Despina Kouali, Western University

1. Invitation to Participate

You are being invited to participate in this research study about examining the relationship between motivation and well-being in athletes. You, as a competitive athlete are being asked to participate, as your sporting life has an impact on your mental well-being.

2. Why is this study being done?

Self-Determination Theory (SDT; Deci & Ryan, 1985) as a theory of motivation, postulates that having a sense of choice and volition (i.e., autonomy), a sense of efficacy in performance (i.e., competence), and the need to feel connected, cared of and accepted by significant others (i.e., relatedness) are the essential factors (i.e., psychological needs) for optimal development, motivation and psychological well-being (Deci & Ryan, 2001). Research on athletes' well-being is limited (Lundqvist, 2011). Notwithstanding, the studies investigating well-being in sport have not distinguished between global (general) well-being and well-being specific to the sport context.
Since there is lack of measurements for assessing athletes' well-being in the sport context (Lundqvist, 2011), the purpose of the present study is to examine:

a) the validity of the Eudaimonic Well-Being in Sport Scale, and b) the relationship between types of motivation and well-being in athletes.

3. **How long will you be in this study?**
   It is expected that you will be in the study approximately for 15 minutes.

4. **What are the study procedures?**
   If you agree to participate you will be asked to complete an online questionnaire or a questionnaire using paper and pencil, before or after practice. The questionnaire will include three sections: a demographics questionnaire, the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008), and the Eudaimonic Well-Being in Sport Scale.

5. **What are the risks and harms of participating in this study?**
   There are no known or anticipated risks or discomforts associated with participating in this study.

6. **What are the benefits of participating in this study?**
   You may not directly benefit from participating in this study but the information gathered from this study may provide researchers with further information regarding a measurement for assessing athletes' well-being on a contextual level.

7. **Can participants choose to leave the study?**
   If you decide to withdraw from the study, you have the right to request withdrawal of information collected about you. If you wish to have your information removed please let the researcher know.

8. **How will participants' information be kept confidential?**
   No personal identifiers will be collected in this study, therefore data provided by the participants will remain anonymous, and will be kept confidential and accessible only to the investigators of the study. While we do our best to protect your information there is no guarantee that we will be able to do so. If data is collected during the project which may be required to report by law we have a duty to report. The investigators will store the study data both in electronic and paper files. Electronic files will be stored on a University local hard drive, and password protected devices (i.e., laptop, and memory stick). The paper files will be stored in a locked cabinet in a secured room at Western premises. All data will be destroyed after five years. If the results of the study are published, your name will not be used.

9. Are participants compensated to be in this study?

You will not be compensated for your participation in this research.

10. What are the rights of participants?

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your academic standing.

We will give you new information that is learned during the study that might affect your decision to stay in the study.

You do not waive any legal right by signing this consent form.

11. Whom do participants contact for questions?

If you have questions about this research study please contact the Principal Investigator Dr. Craig Hall or the Co-Investigator Despina Kouali. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics.

12. **Consent**

You indicate your voluntary agreement to participate by responding to the questionnaire.

This letter is yours to keep for future reference.

Western

Letter of Information and Consent

(Study 3)

Project Title: Examining the effectiveness of an imagery intervention in enhancing athletes' eudaimonic (i.e., psychological) well-being

Document Title: Letter of Information

Principal Investigator + Contact:
Craig Hall, PhD, Western University

Additional Research Staff + Contact:

Despina Kouali, Western University

1. Invitation to Participate

You are being invited to participate in this research study about examining the effectiveness of an imagery intervention in enhancing soccer players' eudaimonic well-being (i.e., psychological well-being). You, as a soccer player are being asked to participate, as your sporting life has an impact on your well-being.

2. Why is this study being done?

Athletes can benefit by utilizing psychological skills, and in turn, these tools can impact performance and well-being (Hall, Duncan, & McKay, 2014). Imagery is a psychological skill that has been defined as creating or re-creating an experience in the mind using all the senses (Vealey & Greenleaf, 2006). Imagery has been broadly investigated in sport, with research supporting its effectiveness and usefulness among athletes (e.g., Weinberg, 2008). Nevertheless, there has been no research conducted examining the relationship between imagery use and eudaimonic well-being. Therefore, the objective of the present study is to examine the effectiveness of an imagery intervention in enhancing athletes' eudaimonic well-being.

3. **How long will you be in this study?**
   It is expected that you will be in the study for 11 weeks. There will be 11 study visits during your participation in this study. During the baseline phase (3-5 visits) and post-intervention phase (3-5 visits) each visit will take approximately 20-25 minutes and during the intervention phase (3 visits) each visit will take approximately 10-15 minutes.

4. **What are the study procedures?**
   If you agree to participate you will be asked to complete a series of baseline evaluations that examine your imagery ability, imagery use, psychological needs, behavioral regulations, and eudaimonic well-being. These questionnaires will take approximately 20-25 minutes to complete. Throughout the intervention each session will take 10-15 minutes. Specifically, you will be provided with imagery scripts to practice on your own daily for 5-10 minutes. They will be provided to you in both an audio and written format. A new imagery script will be given to you every week (for three weeks in total) and you will be given the opportunity to ask questions or discuss any problems. You will be asked to keep track of your imagery use every week in imagery diaries and complete some of the questionnaires from the baseline phase. Following the completion of the intervention, you will be asked to complete again the same questionnaires as in baseline phase. During the last session of the post-intervention phase you will be also asked to complete some open-ended questions (5 minutes) to see how your experience with and knowledge of imagery has changed as well as discuss your experiences with the imagery intervention.

5. **What are the risks and harms of participating in this study?**
   There are no known or anticipated risks or discomforts associated with participating in this study.

6. **What are the benefits of participating in this study?**
   The possible benefits to you may be increased levels of eudaimonic well-being in your sport.

7. **Can participants choose to leave the study?**
   If you decide to withdraw from the study, you have the right to request withdrawal of information collected about you. If you wish to have your information removed please let the researcher know.

8. How will participants' information be kept confidential?

Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. Personal identifiers collected for the present study will be kept separate (on a different University local hard drive) from the data collection files; therefore, data provided by the participants will remain anonymous, and will be kept confidential. While we do our best to protect your information there is no guarantee that we will be able to do so. If data is collected during the project which may be required to report by law we have a duty to report. The investigators will store the study data both in electronic and paper files. Electronic files will be stored on a University local hard drive, and password protected devices (i.e., laptop, and memory stick). The paper files will be stored in a locked cabinet in a secured room at Western premises. All data and information will be destroyed after five years. If the results of the study are published, your name will not be used.

9. Are participants compensated to be in this study?

You will not be compensated for your participation in this research.

10. What are the rights of participants?

Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your academic standing or on your career as a competitive athlete, and your coach will not know who has participated.

We will give you new information that is learned during the study that might affect your decision to stay in the study.

You do not waive any legal right by signing this consent form.

11. Whom do participants contact for questions?

If you have questions about this research study please contact the Principal Investigator Dr. Craig Hall or the Co-Investigator Despina Kouali. If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics.

This letter is yours to keep for future reference.

Written Consent

Project Title: Examining the effectiveness of an imagery intervention in enhancing athletes' eudaimonic well-being

Document Title: Written Consent

Principal Investigator + Contact:

Craig Hall, PhD, Western University

Additional Research Staff + Contact:

Despina Kouali, Western University

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

_____	_____	_____
Print Name of Participant	Signature	Date (DD-MMM-YYYY)

My signature means that I have explained the study to the participant named above. I have answered all questions.

_____	_____	_____
Print Name of Person Obtaining Consent	Signature	Date (DD-MMM-YYYY)

APPENDIX N

Research Ethics Board Approval Notices

Study 1 (Phase 1)

Western Research

Research Ethics

Western University Health Science Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Craig Hall
Department & Institution: Health Sciences\Kinesiology,Western University

NMREB File Number: 106588
Study Title: Psychological Well-Being in Sport: Evaluation of the content validity of a modified version of the Scales of Psychological Well-Being
Sponsor:

NMREB Initial Approval Date: May 08, 2015
NMREB Expiry Date: May 08, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Other	Survey Psychological Well-Being Experts	2015/03/28
Other	Survey Self-Determination Experts	2015/03/28
Other	Recruitment Email	2015/03/28
Western University Protocol		2015/04/23
Letter of Information		2015/03/28

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted]
Ethics Officer, on behalf of Riley Hinson, NMREB Chair or delegated board member

Ethics Officer to Contact for Further Information

Erika Basile	Grace Kelly	Mina Mekhail	Vikki Tran
ebasile@uwo.ca	grace.kelly@uwo.ca	mmekhail@uwo.ca	vikki.tran@uwo.ca

This is an official document. Please retain the original in your files.

Study 1 (Phase 2) and Study 2

Western Research

Western University Non-Medical Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Craig Hall
Department & Institution: Health Sciences\Kinesiology,Western University

NMREB File Number: 107675
Study Title: Validation of the Scales of Psychological Well-Being in Sport

NMREB Initial Approval Date: March 10, 2016
NMREB Expiry Date: March 10, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol	Received February 29, 2016	
Recruitment Items	Permission to recruit	2016/02/29
Recruitment Items	Verbal recruitment script	2016/02/29
Recruitment Items	Letter of Information to contact the Co-Investigator	2016/02/29
Recruitment Items	Email script to interested individuals	2016/02/29
Instruments	Questionnaire (including Letter of Information and Implied Consent)	2016/02/29

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted]

Ethics Officer, on behalf of Dr. Riley Hinson, NMREB Chair or delegated board member

Ethics Officer to Contact for Further Information: Erika Basile ___ Nicole Kaniki ___ Grace Kelly ___ Katelyn Harris ✓ Vikki Tran ___

This is an official document. Please retain a copy for your files.

Study 1 (Phase 3)

Western Research

Research Ethics

Western University Non-Medical Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Prof. Craig Hall
Department & Institution: Health Sciences\Kinesiology,Western University

NMREB File Number: 109347
Study Title: Validation of the Eudaimonic Well-Being in Sport Scale

NMREB Initial Approval Date: July 07, 2017
NMREB Expiry Date: July 07, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol	Received June 8, 2017	
Recruitment Items	In Class Recruitment	2017/06/08
Letter of Information & Consent		2017/06/08
Instruments	Questionnaires	2017/06/08

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB

Ethics Officer, on behalf of Dr. Riley Hinson, NMREB Chair or delegated board member

EO: Erika Basile ___ Grace Kelly ___ Katelyn Harris ✓ Nicola Morphet ___ Karen Gopaul ___ Patricia Sargeant ___

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6G 1G9 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/ethics

Study 3

Western Research

Western University Non-Medical Research Ethics Board
NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Craig Hall
Department & Institution: Health Sciences\Kinesiology,Western University

NMREB File Number: 109271
Study Title: Examining the effectiveness of an imagery intervention in enhancing athletes' eudaimonic (i.e., psychological) well-being

NMREB Initial Approval Date: June 02, 2017
NMREB Expiry Date: June 02, 2018

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Western University Protocol		2017/05/29
Letter of Information & Consent		2017/05/29
Recruitment Items	Permission to recruit	2017/04/20
Recruitment Items	Recruitment script	2017/04/20
Recruitment Items	Co-investigator's contact information	2017/04/20
Instruments	Questionnaires	2017/04/20
Instruments	Imagery scripts	2017/04/20
Instruments	Imagery diary	2017/04/20
Instruments	Post-intervention questionnaire	2017/04/20

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted]
Ethics Officer, on behalf of Dr. Riley Hinson, NMREB Chair or delegated board member

EO: Erika Basile ___ Grace Kelly ___ Katelyn Harris___ Nicola Morphet ___ Karen Gopaul ___ Patricia Sargeant ___

Curriculum Vitae

Curriculum Vitae for Despina Kouali

Education

Sept 2014-present	**PhD Candidate in Psychological Basis of Kinesiology,** Western University, London, ON, Canada.
Mar 2013	**Master of Science in Psychology of Exercise,** University of Thessaly, Trikala, Greece.
Jul 2008	**Bachelor of Science in Psychology,** Panteion University of Social and Political Sciences, Athens, Greece.

Honours and Awards

2017-2018	Ontario Graduate Scholarship, Western University, ON. CDN $15,000.
2017-2018	Dr. Bert Carron Graduate Scholarship in Sport and Exercise Psychology, Western University, ON. CDN $1,000.
2016-2017	Ontario Graduate Scholarship, Western University, ON. CDN $15,000.
2016-2017	The A. G. Leventis Foundation Educational Grant, Zurich, Switzerland. US $6,000.
2015-2016	Ontario Graduate Scholarship, Western University, ON. CDN $15,000.
2015-2016	The A. G. Leventis Foundation Educational Grant, Zurich, Switzerland. US $6,000.
2014-2015	The A. G. Leventis Foundation Educational Grant, Zurich, Switzerland. US $6,000.

Publications

Peer-reviewed publications

Deck, S., **Kouali, D.,** & Hall, C. (in press). Effects of mental imagery use and mindfulness on anxiety, confidence, mental well-being, and performance in shot putt throwers: A case study. *Journal of Emerging Sport Studies.*

Kouali, D., Westlund Stewart, N., & Hall, C. (2017). The characteristics of cognitive general imagery use in curling. *Hellenic Journal of Psychology*, *14*, 20-38.

Westlund Stewart, N., **Kouali, D.,** & Hall, C. (2017). Functions and situations associated with cognitive general imagery use. *Imagination, Cognition and Personality*, *37*(1), 23-44.

Mack, D. E., **Kouali, D.,** Gilchirst, J. D., & Sabiston, C. M. (2015). Pride and physical activity: Behavioural regulations as a motivational mechanism? *Psychology and Health, 30*(9), 1049-1062. doi:10.1080/08870446.2015.1022547

Publications in progress

Kouali, D., Hall, C., & Pope, P. (2018). *Examining an adapted version of Ryff's Scales of Psychological Well-Being in sport.* Manuscript submitted for publication.

Kouali, D., Hall, C., & Pope, P. (2018). *Measuring eudaimonic well-being in sport: Validation of the Eudaimonic Well-Being in Sport Scale.* Manuscript submitted for publication.

Deck, S., DeSantis, B., **Kouali, D.,** & Hall, C. (2018). *A qualitative approach to understanding the impact of partner play in doubles racquet sports.* Manuscript submitted for publication.

Deck, S., Roberts, R., Hall, C., & **Kouali, D.** (2018). *Perfectionism and exercise using the 2×2 model.* Manuscript submitted for publication.

Kouali, D., Hall, C., Divine, A., & Pope, P. (2018). *Motivation and eudaimonic well-being in athletes: A self-determination theory perspective.* Manuscript in preparation.

Kouali, D., Hall, C., & Deck, S. (2018). *Examining the effectiveness of an imagery intervention in enhancing athletes' eudaimonic well-being.* Manuscript in preparation.

Contribution to Conferences

Deck, S., **Kouali, D.,** & Hall, C. (2018, April). *Effects of mental imagery use and mindfulness on anxiety, confidence, mental well-being, and performance in track and field athletes: A case study*. **Poster presentation** at the 4th Annual Kinesiology Graduate Symposium, Western University, ON.

Deck, S., **Kouali, D.,** & Hall, C. (2018, March). *Effects of mental imagery use and mindfulness on anxiety, confidence, mental well-being, and performance in track and field athletes: A case study.* **Poster presentation** at the Western Research Forum, Western University, ON.

Kouali, D., Hall, C., Divine, A., & Pope, P. (2017, October). *Motivation and Eudaimonic Well-Being in Athletes: A Self-Determination Theory Perspective.* **Poster presentation** at the Canadian Psychomotor Learning and Sport Psychology, St. John's NL.

Jacobs, K. G., Woerhle, E., Klassen, S., Deck, S., **Kouali, D.**, Humphreys, D., Hall, C., & Shoemaker, K. J. (2017, October). *Heart Rate Variability Analysis and Mental Health Outcomes in University Female Hockey Players.* **Poster presentation** at the Canadian Psychomotor Learning and Sport Psychology, St. John's NL.

Kouali, D., Hall, C., & Pope, P. (2017, April). *Psychological Well-Being in Sport: Examining the construct validity of a modified version of the Scales of Psychological Well-Being.* **Poster presentation** at the 3rd Annual Kinesiology Graduate Symposium, Western University, ON.

Kouali, D., Hall, C., & Pope, P. (2017, March). *Psychological Well-Being in Sport: Examining the construct validity of a modified version of the Scales of Psychological Well-Being.* **Poster presentation** at the Western Research Forum, Western University, ON.

Kouali, D., Westlund Stewart, N., & Hall, C. (2016, June). *The characteristics of cognitive general imagery use in curling.* **Oral presentation** at the North American Society for the Psychology of Sport and Physical Activity Conference, Montreal, QC.

Westlund Stewart, N., **Kouali, D.**, & Hall, C. (2016, June). *Why athletes use cognitive general imagery in curling: A qualitative investigation.* **Oral presentation** at the North American Society for the Psychology of Sport and Physical Activity Conference, Montreal, QC.

Kouali, D., Westlund Stewart, N., & Hall, C. (2016, April). *The content of cognitive general imagery use in curling.* **Oral presentation** at the 2nd Annual Kinesiology Graduate Symposium, Western University, ON.

Kouali, D., Stavrou, N., Psychountaki, M, Georgiadis, E., & Hall, C. (2015, July). *Predicting flow experience: The role of athletes' goal orientation and motivation.* **Poster presentation** at the14th European Congress of Sport Psychology, Bern, Switzerland.

Stavrou, N., **Kouali, D.**, Koehn, S., & Psychountaki, M. (2014, July). *Flow experience: Examining the importance of trait and state goal orientation.* **Oral presentation** at the 28th International Congress of Applied Psychology, Paris, France.

Kouali, D., Chroni, A., Zourbanos, N., Krommidas, Ch., & Papaioannou, A. (2012, December). *Perceived and desired parental involvement in young male athletes in soccer.* **Oral presentation** at the 12th National Greek Conference of Sport Psychology, Athens, Greece.

Kouali, D. (2012, October). *The coach's role in young soccer players' development.* **Invited oral presentation** at the 1st National Greek Conference of Physical Education and Sport, Athens, Greece.

Kouali, D. (2012, October). *The relationship between coaches and parents: Limits and degree of involvement.* **Invited oral presentation** at the 1st National Greek Conference of Physical Education and Sport, Athens, Greece.

Research Experience

Nov 2015-Feb 2016	**Research Assistant** at the Exercise and Health Psychology Laboratory (EHPL), Western University, ON.
Jan-Apr 2014	**Member** of the Behavioral Health Sciences Research Lab (BHSRL) Brock University, ON: Research/Scholarly activities (manuscript preparation *Pride and Physical Activity*). Supervisor Dr. Diane E. Mack.

Teaching Experience

Mar 2017	*Self-Talk in Sport*. **Lecture** for Psychological Interventions in Sport, Exercise and Injury Rehabilitation (KIN 3474B). Department of Kinesiology, Western University, ON.

Feb 2017	*Imagery in Sport*. **Lecture** for Psychological Interventions in Sport, Exercise and Injury Rehabilitation (KIN 3474B). Department of Kinesiology, Western University, ON.
Jan-Apr 2015	**Graduate Teaching Assistant**: Psychological Interventions in Sport, Exercise and Injury Rehabilitation (KIN 3474B). Department of Kinesiology, Western University, ON.
Sept-Dec 2014	**Graduate Teaching Assistant**: Psychology of Exercise (KIN 2276F). Department of Kinesiology, Western University, ON.
Oct 2014	*How to Write a Manuscript*: **Lecture** for Psychology of Exercise (KIN 2276F). Department of Kinesiology, Western University, ON.

Supervisory Experience

Sept-Apr 2017	**Co-supervisor** (with Dr. Craig Hall) of a Kinesiology undergraduate student's independent research project. Western University, ON.
Jan-Apr 2016	**Co-supervisor** (with Dr. Craig Hall) of a Kinesiology undergraduate student's independent research project. Western University, ON.

Invited Seminars

Mar 2018	*Mental Preparation.* Workshop offered to the varsity rowing team of Western University. London, ON.
Nov 2017	*Mental Preparation.* Seminar offered to track and field coaches for the Club Coach Coaching Association of Canada's National Coaching Certification Program (NCCP). London, ON.
Sept 2017	*The road to success: Learning mental skills to enhance performance.* Seminar offered to medical students from Western University and University of Windsor. Western University, ON.
Sept 2016	*Mental preparation in soccer players.* Seminar offered to professional soccer players (2nd Division). Larnaca, Cyprus.
Dec 2015	*The coach-parents relationship in sport*. Seminar offered to coaches and parents of young athletes registered in APOEL sport club. Nicosia, Cyprus.
Jun 2012	*Young male athletes' motivation in sport: The parents' role.* Seminars offered to parents of young soccer players registered in soccer clubs. Athens, Greece.

Scholarly Activities

April 2018	Presentation judge at the 4th Annual Kinesiology Graduate Symposium, Western University, ON.
Apr 2017-present	Member of the *Sport and Social Impact Research Group.* Department of Kinesiology, Western University, ON.
Dec 2017	Reviewer for the *Psychology of Sport and Exercise.*
Jul 2015-Jan 2017	Reviewer for the *Journal of Imagery Research in Sport and Physical Activity.*
Apr 2016	Co-reviewer for the *Sport, Exercise, and Performance Psychology.*
Oct 2014	Member of the Organizing Committee for the Canadian Society for Psychomotor Learning and Sport Psychology conference. London, ON.

Related Experience

March 2018-present	**Volunteer** at the Western Hub: Individual and group sessions offered to Varsity and Next Gen Athletes in partnership with Canada Sport Institute Ontario and Rowing Canada.
April 2018	**Volunteer** at the Forest City Road Races: Member of the London Psyching Team providing on-the-spot individualized mental skills interventions and support to runners before, during, and after the race. London, ON.
May 2017	**Volunteer** at the M.E.C. Full/Half Marathon (Boston Qualifier): Member of the London Psyching Team providing psychological support to runners before, during and after the race. London, ON.
Sept-Dec 2013	**Intern** in Laboratory of Sport Psychology: Instrument administration and psycho-diagnostic evaluation offered to amateur and high-level athletes of individual and team sports. National Sport Research Institute, Athens' Olympic Center, Athens, Greece.
Jan-Aug 2012	**Sport Psychology Trainee:** Consulting sessions offered to exercisers and amateur athletes. Athens and Trikala, Greece. Supervisor Dr. Stiliani "Ani" Chroni.