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Does Context, Practice or Competition Affect Female Athletes' Achievement Goal Dominance, Goal Pursuit, Burnout and Motivation?

by

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The goal of this study was to assess the effects of two different achievement sport contexts, practice and competition, on the motivational profile of professional/semi-professional athletes. Forty-eight Spanish national/international-level female athletes (basketball = 18; handball = 12; soccer = 11; volleyball = 7), mean age 25.14 ± 3.43 years, agreed to participate in the study. They completed a questionnaire, prior and after training and competition, to assess achievement goals, achievement goal dominance, goal pursuit, motivational climate, motivation, burnout and perceived recovery-exertion. Data analyses revealed that, both in practice and competition, these team-sport athletes overwhelmingly showed a strong mastery-approach achievement goal in dominance as well as in pursuit. A significant finding was that this group of national/international-level, professional/semi-professional athletes not only adopted a mastery-approach achievement goal, but they also actively pursued it. It is also remarkable that this profile remained stable at post-tests, even after a painful defeat in competition, which produced a significant negative effect on the athletes' burnout (emotional and physical exhaustion and devaluation of sport participation) and self-determined motivation. As expected, the difference between total recovery and perceived exertion significantly increased after practice and competition. National/international-level team-sport professional/semi-professional female athletes held and pursue stable mastery-approach goal dominance.

Key words: approach; avoidance; team-sports; perceived exertion; recovery.

Introduction

The quest for improving sport performance includes several fields of study, and sport psychology is one of them. Understanding what motivates athletes in training and competition can help them and their coaches achieve better results. Over the last three decades, the achievement goal theory (Nicholls, 1984) has been one of the most influential theoretical frameworks to understand motivation in sport. At first, achievement goals were divided into two categories: mastery and performance (Nicholls, 1984). Mastery-oriented athletes want to improve their skills, and they compare their performances with their previous ones (intrapersonal comparison). Performance-oriented athletes want to be better than other

athletes, and they compare their performance with other individuals' performance (normative comparison). A couple of decades later, Elliot and McGregor (2001) introduced the 2x2 framework. Mastery and performance achievement goals were divided into approach and avoidance categories based on their valence. Approach goals lead athletes to focus on obtaining desirable outcomes (positively valence), while avoidance goals lead athletes to focus on avoiding undesirable outcomes (negatively valence) (Van Yperen, 2006). Mastery-approach goals are defined in intrapersonal terms and they are positively valenced, while mastery-avoidance goals are also defined in intrapersonal terms, but they are

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negatively valenced. Performance-approach goals are defined in normative terms and they are positively valenced, while performance-avoidance goals are also defined in normative terms, yet they are negatively valenced.

Within this framework, research has showed that some individuals also have a dominant achievement goal in specific contexts (Van Yperen, 2006). Whether at the workplace (Van Yperen and Orehek, 2013) or in educational contexts (Mendez-Gimenez et al., 2014; Van Yperen et al., 2011) certain individuals consistently prefer one specific achievement goal over the rest. In sport contexts, results have been ambiguous: high-level swimmers (Fernandez-Rio et al., 2014) and college athletes (Van Yperen and Renkema, 2008) showed a dominant achievement profile, while young sport participants (Williams, 1998), tennis players (van de Pol and Kavussanu, 2011a), individual and team-sport athletes (van de Pol and Kavussanu, 2011b), soccer players (van de Pol et al., 2012) and volleyball players (Vansteenkiste et al., 2014) did not show a dominant profile or this changed over time. This means that in a particular situation, some people believe that a specific achievement goal is the most important for his/her success. However, the idea of goal dominance does not imply that individuals cannot pursue several goals (Van Yperen, 2006).

Emmons (1996) defined goals as "desired states that people seek to obtain, maintain or avoid". However, "goal setting does not necessarily lead to goal pursuit" (Riediger et al., 2005). Many goals remain just goals, and they never become a true part of the individual, because he/she never really pursues them. The selection, optimization and compensation model of human development (Baltes and Baltes, 1990) emphasizes that select and structure goals are very relevant in an individual's life. "Through them, people give direction to development; through effective goal-directed actions, they shape their life course in aspired directions" (Riediger et al., 2005). According to Wiese et al. (2000), the selection phase represents processes related to goal choice and modification, concentrating on goals perceived as reachable (i.e., improving sport skills), which is considered highly adaptive. The optimization phase involves the usage of means to achieve the desired outcomes (i.e., training

harder to improve one's performance). Finally, the compensation phase entails actions to counteract possible or actual losses (i.e., trying new training methods). Actively setting and pursuing goals seem to play an important role in human development (Riediger et al., 2005). Consequently, in the present research, besides assessing female athletes' achievement goal dominance, we also focused on their intensity of goal pursuit. Following Riediger et al. (2005), "intensity of goal pursuit refers to the extent to which people engage in goal-relevant actions". Previous studies have showed that athletes can adopt different achievement goals from practice to game (Van de Pol and Kavussanu, 2011a,b), and from game to game (Vanteenkiste et al., 2014). However, we do not know whether athletes may have a search for one particular goal. Goal pursuit's assessment can shed more light into achievement goals in athletes.

Another important element in sport contexts is the motivational climate created by coaches (Ntoumanis, 2001), since it can have significant effects (positive and negative) on athletes' psychological well-being and their performance. Two major climates have been hypothesized: ego-involving (performance) characterized by interpersonal competition and constant social comparison, and task-involving (mastery) characterized by cooperation and emphasis on effort and improvement (Newton et al., 2000). In ego climates, athletes are forced to show superiority over others. Achievement is not self-referenced and athletes feel that success depends on things beyond their control. In task climates, athletes and coaches are focused on improving athletes' competence. Achievement is self-referenced, and athletes feel that they are partially responsible for their success (Duda, 2001).

In sport psychology, one theoretical framework extensively used to understand motivation in athletes is the self-determination theory (SDT; Ryan and Deci, 2000). What drives them? Why do they train so hard even under the worst conditions? What type of motivation do high-level athletes hold? Are they different before and after exhaustive exercise? Are they different from practice to competition? The answers to all these questions can help coaches better understand their athletes, shape their coaching

style and maximize their pupils' potential. The SDT proposes three key types of behavioural regulations: intrinsic motivation, extrinsic motivation and amotivation. Intrinsic motivation has been linked to performing an activity for its inherent satisfaction, for the pleasure derived from it. Extrinsic motivation has been connected to performing an activity because individuals value its related outcomes more than the activity itself. Finally, amotivation symbolizes the lack of motivation to perform an activity (Deci and Ryan, 1985). Previous research works have showed a change towards more extrinsic types of motivation in athletes after experiencing high-intensity periods of training (Lemyre et al., 2006). Similarly, significant decreases were found in the self-determined index (SDI) in high-level swimmers after heavy training workloads (Fernandez-Rio et al., 2014). However, there seems to be a lack of studies on the acute effects of competition on athletes' motivational levels.

Among other things, athletic performance has been found dependant on the correct management of the training workload (Kellman et al., 2001), which influences athletes' burnout. This has been defined as a psychological syndrome that includes three main characteristics: reduced sense of accomplishment, emotional and physical exhaustion, and devaluation of sport participation (Raedeke, 1997). They all lead to a decrease in sport performance (Goodger et al., 2007). However, there is still much to know about the prevalence of athlete burnout (Gustafsson et al., 2007), and its connections with other variables such as motivation or achievement in training and competition. There are several perspectives on burnout, but the biopsychological stress model considers that "recovery and stress should be treated using a multilevel approach, dealing with psychological, emotional, cognitive behavioural / performance and social aspects of the problem, considering these aspects both separately and together" (Kellman et al., 2001). Burnout has been linked to negative changes in motivation (Gould, 1996). Several research works have found that athletes with lower SDI scores had also higher burnout levels (Lemyre et al., 2006; Lonsdale et al., 2009). There is a need to assess if it can also affect athletes' achievement goal dominance.

In line with the biopsychological stress model, Borg (1982) tried to investigate each

individual's perception of exertion during physical activity to monitor exercise intensity or stress. He believed that these subjective symptoms had to be assessed through methods applicable to different individuals. Therefore, the Ratings of Perceived Exertion (RPE) Scale was constructed and validated (Borg, 1982). Through different research works, the 6-20 RPE scale has been found a valid mean of regulating and measuring exercise intensity, and it has been extensively used in training and competition (Borg, 1982). Similarly, Kenttä and Hassmén (1998) developed a 6-20 Total Quality Recovery (TQR) scale to monitor and, potentially accelerate, the recovery process. It is similar to the RPE scale, yet it is used prior to training and/or competition (the other one is used afterwards) to assess how recuperated is the athlete. An athlete's training load can have positive and negative effects (Silva, 1990), leading to better performance or burnout, respectively. There is a need to understand the impact of the workload caused by training and/or competition on other variables such as motivation and achievement. Monitoring training and recovery can help assess the whole training process and adopt a holistic perspective on it for the athletes' benefit.

Based on the aforementioned, the main goal of this research was to extend the study of the achievement goal dominance framework. This work constitutes a step forward, since it includes three new elements: the targeted population (team-sport athletes), the context (competition) and new variables (goal pursuit). Therefore, the aims of this research project were threefold: assess the achievement goal dominance profile of national-level team-sport athletes (including goal pursuit), provide information on how the athletes' profile is affected by different contexts (training and competition), and how the athletes' perceived motivational climate, burnout levels and perceived exertions relate to these two different contexts. This study could help coaches gain a deeper understanding of the underlying mechanisms of athletes' motivational behaviour. The current study could also be of help to uncover the connections between achievement goals, burnout and workloads. Finally, this research will compare the above mentioned variables in practice and competition, helping coaches adjust the first to the second, which is the basis of

success in sport. Previous studies have showed that high-level athletes tend to exhibit a strong mastery oriented profile (Fernandez-Rio et al., 2014). Therefore, our first hypothesis was that this group of female athletes would show a strong and stable mastery-approach achievement goal motivational profile (dominance and pursuit). Although previous studies have showed contradictory results, high-level athletes tend to hold solid and dominant achievement goals (Fernandez-Rio et al., 2014), therefore the second hypothesis was that this profile would remain constant after the completion of a training session and an official match. High-level athletes usually train and compete in high-demanding scenarios, which can produce burnout. Previous studies found that athletes with lower SDI scores had also higher burnout levels (Lemyre et al., 2006; Lonsdale et al., 2009). Thus, the third hypothesis was that participants' self-determined motivation and burnout would be negatively affected after a training session and an official game. In line with the previous hypothesis, the fourth hypothesis was that the athletes' ratings of perceived recovery/exertion (TQR/RPE) would increase after practice and competition.

Methods

Participants

Seventy-two active Spanish national/international-level (division I-II) female basketball, volleyball, soccer and handball players were contacted to join the research project. The goal was to assess women's team sports with the highest number of licenses/competitors (they could be considered the most important, the ones with the highest impact on our society). The inclusion criteria were: a) a minimum of 4 year competitive experience at national and/or international level, b) high playing time (>70%), and c) willingness to sign a written consent form and complete a questionnaire prior to and after practice and competition. The exclusion criteria were: a) a serious injury, and b) missed practice and/or matches (>10%). Finally, 48 national-level athletes (25.14 ± 3.43 years) met all the inclusion criteria and agreed to participate in the study. Eighteen were basketball players enrolled in two clubs of the Spanish division-II league: 26.38 ± 4.26 years of age, 4.9 ± 0.2 years of playing experience at national level, 3.1 ± 1.1 years in the

same club; 12 were handball players enrolled in one club of the Spanish division-II league: 27.17 ± 5.69 years of age, 5.1 ± 0.7 years of playing experience at national level, 2.7 ± 1.6 years in the same club; 11 played soccer enrolled in one club of the Spanish division-I league: 23.31 ± 2.34 years of age, 4.3 ± 0.2 years of playing experience at national level, 5.3 ± 1.1 years in the same club; and 7 played volleyball enrolled in one club of the Spanish division-II league: 24.36 ± 2.74 years of age, 5.6 ± 1.4 years of playing experience at national level, 6.1 ± 1.6 years in the same club. They all received a salary for playing sport. Therefore, they could be considered professional or semi-professional players.

Instruments

Achievement goals.

The 2x2 achievement goals questionnaire for sport (Conroy et al., 2003) consists of four subscales (3 items each): mastery-approach (e.g., "It is important to me to perform as well as I possibly can"), mastery-avoidance (e.g., "I worry that I may not perform as well as I possibly can"), performance-approach (e.g., "It is important to me to do well compared to others"), and performance-avoidance (e.g., "I just want to avoid performing worse than others"). Each item was rated on a 7-point Likert scale ranging from 1 = totally disagree to 7 = totally agree. Following Hambleton et al. (2005), all items were translated into Spanish by a specialist, and then again into English to test their similarity with the original ones. Two experts assessed all the items, and they approved their adequacy to measure approach and avoidance achievement goals. Cronbach's alphas obtained were 0.84, 0.70, 0.86, and 0.76 for each subscale, which indicated acceptable internal consistency.

Achievement goal dominance.

Each achievement goal from the Elliot and McGregor's (2001) 2x2 framework (mastery-approach, mastery-avoidance, performance-approach and performance-avoidance) was compared in a pairwise fashion with the other three achievement goals to create the individual's dominant achievement goal assessment instrument (Van Yperen, 2006). Therefore, it consists of six items with two options each (A or B), and each participant must choose one. If he/she selects a particular achievement goal in each of the three contrasts, it is considered his/her

dominant goal. On the other hand, if the participant does not consistently prefer a particular goal, it is assumed that s/he does not have a dominant achievement goal. Again, we followed a Hambleton et al.'s (2005) procedure to ensure the translated version's adequacy to measure approach and avoidance achievement goals.

Achievement goal pursuit.

Based on the research work by Riediger et al. (2005) on goal pursuit, the same concept was adapted to achievement goals, and the 2x2 achievement goal pursuit assessment instrument was developed. For each of the 2x2 achievement goals (mastery-approach, mastery-avoidance, performance-approach and performance-avoidance) participants responded to the following questions: (a) How much energy do you invest to achieve this goal? (b) How often do you think about this goal? (c) How much time do you invest in this goal? (d) How much does this goal determine your sporting life? Athletes rated their response in a 5-point likert scale ranging from 1 = very little/almost never to 5 = a lot/almost always. Once again, we followed the Hambleton et al.'s (2005) procedure to ensure the translated version's adequacy. We computed a single score (mean of all items across all four goals) indicating the participants' average intensity of goal pursuit. Cronbach's alphas obtained were 0.72, 0.76, 0.70, and 0.73 for each subscale, all acceptable scores.

Motivational climate.

The perceived motivational climate in sport questionnaire-2 (Newton et al., 2000) consists of two high order scales, each one including three subscales: task climate: cooperative learning (e.g., "Players help each other learn"), effort/improvement (e.g., "The coach wants us to try new skills"), and important role (e.g. "Each player contributes in some important way"), and ego climate: punishment for mistakes (e.g. "The coach gets mad when a player makes a mistake"), unequal recognition (e.g., "The coach gives most of his or her attention to the stars"), and intra-team member rivalry (e.g., "The coach praises players only when they outplay team-mates"). Each item was preceded by the stem "On this team" and they were rated on a 5-point Likert scale ranging from 1 = totally disagree to 5 = totally agree. It was validated for Spanish sport contexts by González-Cutre et al. (2008).

Cronbach's alphas obtained were 0.74 and 0.75 for each subscale, all acceptable.

Motivation.

The situational motivation scale (SIMS; Guay et al., 2000) is a measure of situational (or state) motivation toward a chosen activity. This self-report inventory measures intrinsic motivation, identified regulation, external regulation and amotivation (four items per scale). Participants are asked to respond to the stem: "Why are you currently engaged in this activity?". Each item was rated on a 7-point Likert scale ranging from 1 = corresponds not at all to 7 = corresponds exactly. It was validated for Spanish contexts by Martín-Albó et al. (2009). Cronbach's alphas obtained were 0.87, 0.80, 0.83, and 0.84 for each subscale, which indicated that all scores produced had acceptable internal consistency. As the subscales of the SIMS assess types of motivation from the entire range of the self-determination continuum, the SDI was calculated using the following formula: (2 * intrinsic motivation + identified regulation - external regulation - 2 * amotivation).

Burnout.

The athlete burnout questionnaire (Raedeke and Smith, 2001) is a sport-specific instrument with 3 subscales: reduced sense of accomplishment (e.g., "I am not performing up to my ability in sport"), emotional and physical exhaustion (e.g., "I feel physically worn out from sport"), and devaluation of sport participation (e.g., "I have negative feelings toward sport"). The stem for each question was: "How often do you feel this way?" Athletes were asked to rate their response in a 5-point Likert scale ranging from 1 = almost never to 5 = almost always. It was validated for Spanish sport contexts by Arce et al. (2010). Cronbach's alphas obtained were 0.81, 0.84, and 0.72 for each subscale, which indicated acceptable internal consistency.

Perceived recovery-exertion.

Morgan and Borg (1976) observed that the rate of change in the ratings of perceived exertion during prolonged work can be used as a sensitive predictor of the point of self-imposed exhaustion. The RPE scale ranges the perceived effort from 6 = very, very light to 20 = very, very hard. Borg (1982) found that this scale assumed a linear function between perceptual and physiological (VO_2, HR) or physical (work rate) parameters.

Thus, it became "the single best indicator of the degree of physical strain (Borg, 1982). In the present study, athletes were asked at the end of practice and competition: How hard was the exercise? Similarly, the TQR (Kenttä and Hassmen, 1988) was used to assess participants' perception of recovery prior to training and competition. It serves to increase athletes' self-awareness. The TQR scale ranges the perceived recovery from 6 = very, very light to 20 = very, very hard. Participants were asked: "how recuperated are you?". Again, we followed the Hambleton et al.'s (2005) procedure to ensure the translated version's adequacy. RPE/TQR scores are presented together. However, "Pre" scores represent TQR values, while "Post" scores represent RPE values.

Procedure

The implementation of this research project involved three steps: first, permission from the Ethics Committee of the researchers' university and the participants' club was obtained. Second, a written informed consent form was signed by all participants. Third, prior and after one regularly scheduled training session and one official competition, participants were asked to complete a specifically designed questionnaire, which included all the scales described above. Additionally, participants were asked to rate their perceived recovery (TQR) and exertion (RPE) at the beginning and at the end of practice and competition, respectively. The testing conditions were the same for all participants: (a) the training session and the game took place in the same week in the middle of each team's regular season; (b) athletes completed the survey in their locker room; and (c) they had all the time they needed (an average of 10-12 minutes). They were carefully monitored during data collection. To minimize the tendency of participants to provide socially desirable answers, researchers asked them to be totally honest, guarantying complete anonymity and confidentiality.

Data Analyses

All data were analyzed using SPSS 19.0 (IBM, Chicago, IL). First, exploratory analyses were conducted to establish whether data met parametric assumptions. The Shapiro-Wilk test showed that none of the dependent variables were normally distributed (*Sig.* < .05). Therefore, non-parametric tests were used to analyze

gathered data. Pre- and post-test descriptive statistics were calculated. Finally, the Wilcoxon signed-rank test was used to analyze inter-group differences in pre and post practice and game.

Results

Table 1 shows pre- and post-test means and standard deviations among all variables prior and after practice and competition. Task climate, mastery-approach achievement goals and mastery-approach goal pursuit showed higher values in all the four data collection times (pre-post practice-game). Regarding pre-post comparisons, in practice, significant differences were found in SDI: Z = -2.03, *p* < .05, TQR/RPE: Z = -2.51, *p* < .05, and reduced sense of accomplishment: Z = -2.13, *p* < .05 after the training period. In competition, these three variables also differed significantly after the official game: SDI: Z = -2.47, *p* < .05, TQR/RPE: Z = -2.34, *p* < .05, and reduced sense of accomplishment: Z = -2.14, *p* < .05. Finally, devaluation of sport participation showed significant post-game differences only: Z = -2.57, *p* < .01 (not in practice). No significant differences were found pre-post practice and/or competition in perceived climate, 2x2 achievement goals, 2x2 goal pursuit, or emotional and physical exhaustion.

Individual dominant achievement goals were assessed prior and after practice and competition (Table 2). In practice, a very high percentage of participants had a dominant goal (81.25%), since they consistently chose the same goal three times (Van Yperen, 2006). Moreover, at least 75% of them showed a mastery-approach dominant achievement goal profile prior and after practice. Just one participant showed performance-avoidance dominance, and it changed after practice. In competition, a similar percentage (68.75%) had a dominant goal: mastery-approach. Regarding the consistency of the participants' dominance in practice, only 4 athletes changed it: 2 from performance-approach to mastery-approach, 1 from mastery-avoidance to mastery-approach, and 1 from performance-avoidance to no dominance. In competition, fewer changes were observed: 2 athletes moved from mastery-approach to performance-approach. Only individuals that showed mastery-approach dominance (68.75%) maintained the same

dominance across the four data collection times (pre-post practice and competition).

Finally, results were analyzed based on the sport. Similar to the global results, no significant differences were found pre-post practice and/or competition in perceived climate, 2x2 achievement goals, 2x2 goal pursuit, or emotional and physical exhaustion. Additionally, non-significant differences were observed in burnout: emotional and physical exhaustion, reduced sense

of accomplishment and devaluation and sport participation. Significant decreases were observed in SDI after competition in all sports, handball, $Z = -2.13$, $p < .05$, basketball, $Z = -2.67$, $p < .05$, volleyball, $Z = -2.42$, $p < .05$, except soccer, $Z = -1.08$, $p = .286$; and only in volleyball, $Z = -2.34$, $p < .05$, and handball after practice: $Z = -2.11$, $p < .05$. Finally, significant differences were observed in TQR/RPE only in basketball after practice: $Z = 3.07$, $p < .001$, and volleyball after competition: $Z = 2.89$, $p < .01$.

Table 1

Means (M) and standard deviations (SD) of all variables

Variable	Practice				Competition			
	Pre		Post		Pre		Post	
	M	SD	M	SD	M	SD	M	SD
Task climate	3.56[a]	.37	3.59[a]	.42	3.62[a]	.39	3.60[a]	.47
Performance climate	3.44[a]	.36	3.48[a]	.40	3.52[a]	.41	3.47[a]	.46
Mastery-approach	6.26[a]	.79	6.27[a]	.90	6.39[a]	.75	6.12[a]	.94
Mastery-avoidance	5.47[a]	1.15	5.30[a]	1.24	5.35[a]	1.02	5.41[a]	1.01
Performance-approach	4.23[a]	1.36	4.02[a]	1.38	4.19[a]	1.20	4.41[a]	1.08
Performance-avoidance	3.45[a]	1.36	3.41[a]	1.37	3.56[a]	1.34	3.67[a]	1.39
Mastery-approach goal Pursuit	4.06[a]	.60	3.93[a]	.57	4.06[a]	.58	4.00[a]	.61
Mastery-avoidance goal Pursuit	3.63[a]	1.13	3.48[a]	.83	3.65[a]	.90	3.57[a]	.80
Performance-approach goal Pursuit	3.48[a]	.68	3.43[a]	.76	3.52[a]	.74	3.48[a]	.80
Performance-avoidance goal Pursuit	3.14[a]	.81	3.16[a]	.80	3.25[a]	.77	3.39[a]	.80
SDI	12.22[a]	4.18	12.13[a]	5.03	12.13[ab]	4.26	8.45[c]	5.90
TQR/RPE	14.27[a]	2.10	15.60[b]	2.24	14.01[a]	2.09	15.83[b]	2.14
Emotional and physical exhaustion	2.74[a]	.81	2.74[a]	.88	2.76[a]	.82	2.86[a]	.90
Reduced sense of accomplishment	2.60[a]	.57	2.91[b]	.52	2.71[a]	.47	2.90[b]	.54
Devaluation of sport participation	3.09[ab]	.54	3.04[a]	.52	3.06[a]	.46	3.23[b]	.53

SDI: self-determined index; TQR: total quality recovery (Pre scores);
RPE: ratings of perceived effort (Post scores); a, b, c, d: means
in the same row which do not share superscripts differ at p < .05

Table 2

Achievement goal dominance

Variable	Practice		Competition	
	Pre	Post	Pre	Post
Mastery-approach	36 (75%)	39 (81.25%)	35 (72.92%)	33 (68.75%)
Mastery-avoidance	3 (6.25%)	2 (4.17%)	4 (8.33%)	4 (8.33%)
Performance-approach	5 (10.41%)	3 (6.25%)	7 (14.58%)	9 (18.75%)
Performance-avoidance	1 (2.09%)	-	-	-
No Dominance	3 (6.25%)	4 (8.33%)	2 (4.17%)	2 (4.17%)

Each number indicates participants.

Table 3

Means (M) and standard deviations (SD) of volleyball players.

Variable	Practice				Competition			
	Pre		Post		Pre		Post	
	M	SD	M	SD	M	SD	M	SD
Task climate	3.78[a]	.26	3.70[a]	.39	3.77[a]	.34	3.66[a]	.46
Performance climate	3.44[a]	.31	3.39[a]	.41	3.46[a]	.34	3.55[a]	.36
Mastery-approach	6.41[a]	.61	6.15[a]	1.02	6.33[a]	.60	5.96[a]	1.09
Mastery-avoidance	5.52[a]	1.16	5.15[a]	1.05	5.30[a]	.80	5.26[a]	1.00
Performance-approach	4.11[a]	1.37	4.25[a]	1.58	4.00[a]	1.30	4.29[a]	1.30
Performance-avoidance	3.41[a]	1.28	3.63[a]	1.55	3.48[a]	1.65	3.78[a]	1.12
Mastery-approach goal Pursuit	3.97[a]	.49	3.97[a]	.54	3.98[a]	.71	4.00[a]	.69
Mastery-avoidance goal Pursuit	2.94[a]	1.17	3.30[a]	1.04	3.28[a]	1.17	3.03[a]	1.06
Performance-approach goal Pursuit	3.31[a]	.90	3.52[a]	.97	3.19[a]	.89	3.47[a]	.58
Performance-avoidance goal Pursuit	3.02[a]	.82	3.06[a]	.79	3.03[a]	.82	3.50[a]	.91
SDI	12.80[a]	3.93	10.87[b]	3.84	10.31[ab]	5.10	5.96[c]	5.45
TQR/RPE	13.33[a]	2.50	14.44[a]	2.65	12.78[a]	1.64	16.44[b]	1.30
Emotional and physical exhaustion	3.16[a]	.84	3.09[a]	.92	3.31[a]	.84	3.29[a]	.75
Reduced sense of accomplishment	3.15[a]	.64	3.42[a]	.51	3.22[a]	.72	3.08[a]	.87
Devaluation of sport participation	2.95[a]	.57	3.09[a]	.60	3.07[a]	.44	3.40[a]	.60

SDI: self-determined index; TQR: total quality recovery (Pre scores);
RPE: ratings of perceived effort (Post scores); a, b, c, d: means
in the same row which do not share superscripts differ at p < .05

Table 4

Means (M) and standard deviations (SD) of basketball players

Variable	Practice				Competition			
	Pre		Post		Pre		Post	
	M	SD	M	SD	M	SD	M	SD
Task climate	3.41[a]	.35	3.57[a]	.49	3.63[a]	.39	3.58[a]	.49
Performance climate	3.37[a]	.38	3.48[a]	.41	3.52[a]	.33	3.46[a]	.42
Mastery-approach	6.31[a]	.92	6.35[a]	1.23	6.46[a]	1.00	5.98[a]	1.06
Mastery-avoidance	5.33[a]	1.34	5.22[a]	1.45	5.02[a]	1.23	5.52[a]	1.45
Performance-approach	3.94[a]	1.49	3.90[a]	1.46	3.96[a]	1.25	4.17[a]	1.10
Performance-avoidance	3.15[a]	1.39	3.29[a]	1.51	3.15[a]	1.36	3.63[a]	1.49
Mastery-approach goal Pursuit	3.84[a]	.68	3.91[a]	.57	3.97[a]	.53	3.81[a]	.71
Mastery-avoidance goal Pursuit	3.75[a]	1.49	3.58[a]	.77	3.67[a]	.93	3.45[a]	.64
Performance-approach goal Pursuit	3.42[a]	.53	3.38[a]	.71	3.42[a]	.58	3.27[a]	.89
Performance-avoidance goal Pursuit	3.00[a]	.73	3.22[a]	.92	3.23[a]	.82	3.28[a]	.83
SDI	13.22[a]	4.61	12.82[a]	5.40	13.33[a]	5.10	8.43[b]	5.45
TQR/RPE	14.81[a]	1.72	16.25[b]	1.80	14.75[a]	3.60	15.43[a]	2.78
Emotional and physical exhaustion	2.50[a]	.86	2.53[a]	.89	2.49[a]	.77	2.65[a]	.92
Reduced sense of accomplishment	1.99[a]	.54	1.97[a]	.63	1.98[a]	.88	2.36[a]	.87
Devaluation of sport participation	3.33[a]	.47	3.01[a]	.61	3.02[a]	.45	3.31[a]	.60

SDI: self-determined index; TQR: total quality recovery (Pre scores);
RPE: ratings of perceived effort (Post scores); a, b, c, d: means
in the same row which do not share superscripts differ at p < .05

Table 5

Means (M) and standard deviations (SD) of soccer players

| | Practice | | | | Competition | | | |
| | Pre | | Post | | Pre | | Post | |
Variable	M	SD	M	SD	M	SD	M	SD
Task climate	3.35[a]	.31	3.36[a]	.37	3.39[a]	.35	3.23[a]	.33
Performance climate	3.50[a]	.31	3.55[a]	.34	3.53[a]	.32	3.44[a]	.38
Mastery-approach	6.26[a]	.80	6.50[a]	.41	6.49[a]	.63	6.11[a]	1.06
Mastery-avoidance	5.74[a]	.74	5.83[a]	.76	5.90[a]	.75	5.50[a]	.89
Performance-approach	4.67[a]	1.06	4.22[a]	1.41	4.36[a]	1.19	4.56[a]	1.10
Performance-avoidance	3.51[a]	1.46	3.33[a]	1.26	4.00[a]	1.10	3.86[a]	1.23
Mastery-approach goal Pursuit	4.23[a]	.46	4.02[a]	.54	4.09[a]	.48	4.04[a]	.53
Mastery-avoidance goal Pursuit	3.69[a]	.85	3.71[a]	.75	3.54[a]	.86	3.73[a]	.51
Performance-approach goal Pursuit	3.37[a]	.62	3.52[a]	.63	3.48[a]	.63	3.63[a]	.65
Performance-avoidance goal Pursuit	3.00[a]	.84	3.10[a]	.68	3.25[a]	.94	3.48[a]	.48
SDI	12.27[a]	3.39	12.72[a]	2.35	12.82[a]	2.88	10.42[a]	5.45
TQR/RPE	13.15[a]	2.73	14.33[a]	2.10	15.84[a]	2.62	14.69[a]	2.93
Emotional and physical exhaustion	2.55[a]	.76	2.38[a]	.70	2.54[a]	.74	2.68[a]	.80
Reduced sense of accomplishment	2.44[a]	.57	2.73[a]	.72	2.81[a]	.67	2.92[a]	.76
Devaluation of sport participation	2.92[a]	.56	3.08[a]	.49	3.08[a]	.44	3.03[a]	.47

SDI: self-determined index; TQR: total quality recovery (Pre scores);
RPE: ratings of perceived effort (Post scores); a, b, c, d: means
in the same row which do not share superscripts differ at p < .05

Table 6

Means (M) and standard deviations (SD) of handball players

| | Practice | | | | Competition | | | |
| | Pre | | Post | | Pre | | Post | |
Variable	M	SD	M	SD	M	SD	M	SD
Task climate	3.80[a]	.34	3.76[a]	.32	3.75[a]	.41	3.88[a]	.49
Performance climate	3.48[a]	.42	3.69[a]	.34	3.64[a]	.46	3.70[a]	.59
Mastery-approach	6.10[a]	.79	6.05[a]	.65	6.28[a]	.65	6.03[a]	.74
Mastery-avoidance	5.33[a]	1.31	5.00[a]	1.42	5.26[a]	1.21	5.31[a]	1.21
Performance-approach	4.26[a]	1.50	4.31[a]	1.22	4.46[a]	1.15	4.69[a]	1.31
Performance-avoidance	3.82[a]	1.35	3.95[a]	1.21	3.72[a]	1.30	4.02[a]	1.70
Mastery-approach goal Pursuit	4.21[a]	.69	4.19[a]	.65	4.23[a]	.65	4.21[a]	.46
Mastery-avoidance goal Pursuit	3.90[a]	.74	3.88[a]	.83	4.01[a]	.66	3.98[a]	.82
Performance-approach goal Pursuit	3.81[a]	.74	3.58[a]	.86	3.94[a]	.84	3.67[a]	.96
Performance-avoidance goal Pursuit	3.56[a]	.84	3.44[a]	.80	3.42[a]	.51	3.48[a]	.88
SDI	10.54[a]	4.48	8.67[b]	6.27	11.19[a]	3.40	8.56[b]	4.30
TQR/RPE	15.08[a]	1.61	14.63[a]	1.34	16.23[a]	2.74	15.50[a]	2.15
Emotional and physical exhaustion	2.92[a]	.74	3.07[a]	.91	2.94[a]	.78	3.00[a]	.72
Reduced sense of accomplishment	2.57[a]	.86	2.65[a]	.65	2.69[a]	.47	2.60[a]	.58
Devaluation of sport participation	3.09[a]	.56	3.23[a]	.40	3.15[a]	.57	3.20[a]	.56

SDI: self-determined index; TQR: total quality recovery (Pre scores);
RPE: ratings of perceived effort (Post scores); a, b, c, d: means
in the same row which do not share superscripts differ at p < .05

Discussion

The main finding of this study was that national/international-level female basketball, handball, soccer and volleyball players exhibited a strong mastery-approach achievement goal profile in practice and in competition. Their achievement goal dominance and pursuit were also robustly mastery-approach oriented. Furthermore, this dominance was maintained after the completion of a training session, but also following an official match which ended with a defeat. The motivational climate perceived by the athletes was also mastery-oriented. These female athletes' self-determined motivation and burnout levels significantly decreased and increased after the selected practice and game, respectively. Finally, the difference TQR/RPE significantly increased in both post-tests too, reaching similar high-levels in the two cases.

Our first hypothesis was that this group of athletes would show a strong and firm mastery-approach achievement goal motivational profile. Participants scored higher on mastery-approach goals, followed by mastery-avoidance, performance-approach and performance-avoidance goals and this trend was maintained across the four data collection times: pre-post practice and competition. Previous studies have showed contradictory results. Some have showed the same specific profile in high-level swimmers (Fernandez-Rio et al., 2014) and talented young athletes (Van Yperen and Renkema, 2008). On the contrary, research conducted in young tennis players (van de Pol and Kavussanu, 2011a), young female sport participants (Williams, 1998) and male volleyball players (Vansteenskiste et al., 2014) found that athletes could modify their dominant achievement goal profile across training and competition. A possible explanation for this difference could be found in the players' performance level. These last studies were conducted in young or medium-low level athletes, while all athletes from this study and from the other two that showed similar results were considered high-level. Great performers, such as the national/international-level basketball, volleyball, soccer and handball players of the current study, tend to embrace mastery-approach goals (Van Yperen and Renkema, 2008) because the adoption of mastery-approach goals have been considered very helpful for performance

attainment (Linnenbrink-Garcia et al., 2008). Moreover, the female athletes from the current study showed overwhelmingly mastery-approach goal dominance (68.75–81.25%) across the four data collection times, which reinforces the idea that high-level athletes, most of them professionals, seem to possess a stable motivational mastery-approach profile (Fernandez-Rio et al., 2014) compared to young or medium-level athletes (van de Pol and Kavussanu, 2011a; Vansteenskiste et al., 2014; Williams, 1998). Finally, our results also showed that this group of national/international-level athletes perceived a task climate in both practice and competition in the different sports, which could have promoted their mastery-approach achievement goal motivational profile. This is very important because some coaches tend to show a higher performance-oriented climate in competition than in practice (van de Pol et al., 2012).

A novelty of this study was the assessment of athletes' goal pursuit as an extra indicator of achievement goal dominance. Only the jointed actions of setting and pursuing goals can truly represent each individual's active role in his/her own development (Riediger et al., 2005). Our results showed that this group of national/international-level female athletes not only believed that their dominant achievement goals were mastery-approach, but their responses also indicated that they actively pursued this type of achievement goals. This finding reinforces the idea that high-level athletes tend to adopt, and in our case also chase, mastery-approach achievement goals, which is consistent with previous findings in high-level swimmers (Fernandez-Rio et al., 2014) and high-level young athletes (Van Yperen and Renkema, 2008), but inconsistent with findings in tennis players (van de Pol and Kavussanu, 2011a), young sport participants (Williams, 1998) and volleyball players (Vansteenskiste et al., 2014). As explained earlier, a possible explanation for these contradictory results could be found in the performance level of the athletes under study. Individuals whose performance level was high, even professional or semi-professional like the ones in this study, showed a more stable mastery-approach. It can be hypothesized that this profile is needed to reach this high level. Our results also

showed that goal pursuit followed the same trend as the 2x2 achievement goals: mastery-approach scored higher, followed by mastery-avoidance, performance-approach and performance-avoidance. They indicate the same idea: high-level athletes adopt and actively seek mastery-approach achievement goals.

Our second hypothesis was that the players' mastery-approach dominant profile would remain stable after the completion of a training session and an official match, and our results supported this hypothesis. The Cyclical Model of Self-Regulated Learning (Zimmerman, 2008) can help understand this phenomenon. According to this model, the learning cycle includes three phases: forethought, performance and self-reflection. Prior to the training session/competition (forethought phase), each athlete conforms his/her achievement goals, and tries to plan, supervise and regulate his/her motivation and perform during the training session/competition (performance phase) according to it. Furthermore, they try to keep those goals unchanged after practice/competition (self-reflection). Previous studies uncovered that young sport participants (Williams, 1998) or medium-level athletes (van de Pol and Kavussanu, 2011a,b; van de Pol et al., 2012; Vansteenkiste et al., 2014) did not show a dominant profile or this changed over time. However, our results reinforce the idea that high-level athletes tend to establish solid and dominant achievement goals, and those goals tend to carry them through practice (Fernandez-Rio et al., 2014) and into competition. Furthermore, our results showed that the number of female athletes that showed this type of dominance (mastery-approach) increased after practice from 75 to 81.25% (Table 2). As explained earlier, great performers, such as the national/international-level, professional/semi-professional players of the current study, tend to embrace mastery-approach goals (Van Yperen and Renkema, 2008) because the adoption of these goals have been considered very helpful for performance attainment (Linnenbrink-Garcia et al., 2008). Previous studies on high-level swimmers also found similar results, regardless of the training sessions' intensity level (Fernandez-Rio et al., 2014). On the other hand, mastery-approach dominance slightly decreased after competition

(4.17%, 2 participants). We must keep in mind that, curiously, all the participating national/international-level athletes lost the game assessed. However, this defeat produced a shift in very few players' dominance: two moved to performance-approach. One possible explanation for this phenomenon could be that these players were not satisfied with their performance or with the final result of that particular game, and it could have produced a temporary period of distrust in their achievement goal's dominance. Finally, another positive result regarding goal dominance was that performance-avoidance was selected by just one player at only one data collection time (pre-practice), because this goal has been link to anxiety or amotivation (Castillo et al., 2011). Athletes from the current study were high-level, experienced competitors, who liked to compete and obtain the best possible results in competition.

Our third hypothesis was that participants' self-determined motivation and burnout would be negatively affected after a training session and an official game, and our results supported this idea. Reduced sense of accomplishment significantly decreased after practice and competition, and devaluation of sport participation significantly decreased after competition (a severe loss). Li et al. (2013) in a recent meta-analysis found that these two burnout components tended to show stronger links to motivation. National/international-level athletes take part in high-intense competitions. Therefore, their practices should reach the same intensity level. Previous studies have also showed a decrease in high-level athletes' SDI after high-intensity training sessions (Fernandez-Rio et al., 2014; Lemyre et al., 2006). Athletes with burnout syndrome describe loss of motivation (Gustafsson et al., 2011). This idea is reinforced by the significant increase found in the athletes' reduced sense of accomplishment after the completion of the assessed practice. The same phenomenon was hypothesized in a previous study (Fernandez-Rio et al., 2014), but it was not confirmed because burnout was not measured. However, this hypothesis was confirmed in the present study: after an intense training session, burnout levels increased (reduced sense of accomplishment). The same trend was observed after an official competition. Our results showed a significant

decrease in this group of high-level female athletes' SDI, and a significant increase in their reduced sense of accomplishment and in their devaluation of sport participation. As clarified earlier, all the assessed games ended in a defeat, which could explain the players' post-game reduced self-determined motivation and the temporary period of burnout. Experiencing a defeat after a game is a negative experience in the quest of a desired goal (the victory), which seems to produce psychological distress and lead to burnout (Gould and Dieffenbach, 2002).

Our fourth hypothesis was that athletes' ratings of perceived recovery-exertion (TQR/RPE) would increase at post-tests, both in practice and competition. Our results supported this hypothesis: both sport contexts produced a significant increase in the participating athletes' TQR-RPE difference. As stated earlier, national/international-level players must contend in high-demanding competitions. Consequently, their training sessions must reach similar intensity levels to be able to perform and be successful. Our results confirm this idea: both contexts produced similar high post-test RPE scores. This finding is inconsistent with findings in professional basketball players (Moreira et al., 2012) and Australian football players (Henderson et al., 2015) who exhibited higher RPE scores after competition than after practice. It may be hypothesized that either athletes in the current study experienced a very demanding practice or the competition was perceived as hard as practice (the game loss might produce this effect). This high intensity workload could explain the negative effects of practice and competition on the athletes' SDI and burnout levels, which is consistent with the previous research work mentioned above (Lemyre et al., 2006). Research has showed that "the non-invasive and simple session RPE is useful for tracking training and game loads in respect to injury risk" (Rogalski et al., 2013). Therefore, it should be used by coaches.

Finally, results were analysed based on the participants' sport. Similar to the global results, no significant differences were found pre-post practice and/or competition in perceived climate, 2x2 achievement goals, 2x2 goal pursuit, or emotional and physical exhaustion. Additionally, no significant differences were observed in any of the burnout variables.

Significant decreases were observed only in SDI after competition in all sports (handball, basketball, volleyball) except soccer; and only in volleyball and handball after practice. Finally, significant differences were observed in the TQR-RPE difference only in basketball after practice and volleyball after competition. The very limited number of participants (basketball = 18, handball = 12, soccer = 12, and volleyball = 7) could have influenced these poor results; different from the ones obtained in the global analysis.

In conclusion, our national/international-level team-sport professional/semi-professional athletes portrayed a mastery-approach dominant achievement goal profile, but they also actively pursued it. These findings represent a step forward in the study of the achievement goal framework in sport. In many different activities, individuals set goals that they never actually pursue, and those goals never become a true part of their lives. As explained earlier, setting and actively pursuing goals seem to play a significant role in human development. This idea can also be applied to high achieving contexts such as sport. Our results showed that team-sport national/international-level, professional/semi-professional female athletes hold a dominant mastery-approach achievement goal profile, but, more important, they actively pursue it. Another remarkable finding was that this mastery-approach dominance was consistent after an intense training session and a competition (which ended in a defeat). Both high-intense contexts (measured through TQR/RPE) produced significant negative effects on these high-level female athletes' self-determined motivation and burnout levels, but they did not affect their goal dominance and pursuit. These findings indicate that coaches should try to foster the pursuit of mastery-approach goals among their athletes, if they want to monitor their athletes' career, improve their performance and reach national/international-level and professional/semi-professional status.

The present study holds some limitations. First, the number of participants was limited. However, it is very difficult to find national/international-level team-sport athletes willing to answer a questionnaire after an official game. Second, team sports (basketball, volleyball, soccer and handball) were selected for this study.

There is a need to conduct similar studies on individual sports such as track and field, swimming or gymnastics. Third, participants were only women. It is important to find out if the same framework can be observed in male athletes. Fourth, participants were surveyed after just one practice and one official game. There is a need to explore the same variables after more practices and/or games. Finally, all the games assessed ended in a loss. More data should be obtained after a win to compare results.

References

Arce C, De Francisco C, Andrade E, Arce I, Raedeke T. Spanish version of the ABQ to assess burnout in footballers. *Psicothema,* 2010; 22 (2): 250-255

Baltes PB, Baltes MM. Psychological perspectives on successful aging: The model of selective optimization with compensation. In: *Successful aging: Perspectives from the behavioral sciences.* Baltes PB, Baltes MM. (eds). Cambridge: Cambridge University Press. 1-34; 1990

Borg G. Psychological bases of perceived exertion. *Med Sci Sports Exerc,* 1982; 14 (5): 377-381

Castillo I, Duda JL, Alvarez MS, Mercé J, Balaguer I. Motivational climate, achievement goals and well being in young soccer players. *Rev Psicol Deporte,* 2011; 20: 149-164

Conroy DE, Elliot AJ, Hofer SM. A 2x2 Achievement Goals Questionnaire for Sport: Evidence for factorial invariance, temporal stability, and external validity. *J Sport Psychol,* 2003; 25: 456-476

Deci EL, Ryan RM. *Intrinsic motivation and self-determination in human behavior.* New York, NY: Plenum; 1985

Duda JL. Goal perspectives and their implications for health related outcomes in the physical domain. In: *Advances in motivation theories in the sport domain.* Cury F, Sarrazin P, Famose FP. (eds). Paris: Presses Universitaires de France. 27-49; 2001

Elliot AJ, McGregor HA. A 2 x 2 achievement goal framework. *J Pers Social Psychol,* 2001; 80: 501-519

Emmons RA. Striving and feeling: Personal goals and subjective well-being. In: *The psychology of action: Linking cognition and motivation to behavior.* Gollwitzer PM, Bargh JA. (eds). New York, Guilford Press. 313-337; 1996

Fernandez-Rio J, Cecchini JA, Méndez-Giménez A, Fernandez-García B, Saavedra P. 2x2 Dominant Achievement Goal Profiles in high-level Swimmers. *Eur J Sport Sci,* 2014; 14(3): 265-272

González-Cutre D, Sicilia A, Moreno JA. Socio-cognitive model of achievement goals in physical education. *Psicothema,* 2008; 20(4): 642-651

Goodger K, Gorely T, Lavallee D, Harwood C. Burnout in Sport: A Systematic Review. *Sport Psychol,* 2007; 21(2): 127-151

Gould D. Personal motivation gone away: Burnout in competitive athletes. *Quest,* 1996; 48: 275–289

Gould D, Dieffenbach K. Overtraining, underrecovery, and burnout in sport. In: *Enhancing recovery: Preventing underperformance in athletes.* Kellmann M. (ed). Champaign, Human Kinetics. 25-35; 2002

Guay F, Vallerand RJ, Blanchard C. On the assessment of situational intrinsic and extrinsic motivation: The Situational Motivation Scale (SIMS). *Motivation and Emotion,* 2000; 24(3): 175-213. doi:10.1023/A:1005614228250

Gustafsson H, Kenttä G, Hassmén P. Athlete burnout: an integrated model and future research directions. *Int Rev Sport Exer Psy*, 2011; 4: 3-24

Gustafsson H, Kenttä G, Hassmén P, Lundqvist C. Prevalence of burnout in competitive adolescent athletes. *Sport Psychol,* 2007; 21: 21-37

Hambleton R, Merenda P, Spielberger C. (Eds.) *Adapting educational and psychological tests for cross-cultural assessment.* Erlbaum, Mahwah; 2005

Henderson B, Cook J, Kidgell DJ, Gastin PB. Game and training load differences in elite junior australian football. *J Sports Sci Med*, 2015; 14: 494-500

Kellman M, Altenburg D, Lormes W, Steinacker JM. Assessing stress and recovery during preparation for the World Championships in rowing. *Sport Psychol,* 2001; 15: 151-167.

Kenttä G, Hassmén, P. Overtraining and recovery. *Sports Med*, 1998; 26 (1): 1-16

Lemyre PN, Treasure DC, Roberts GC. Influence of Variability in Motivation and Affect on Elite Athlete Burnout Susceptibility. *J Sport Exercise Psy*, 2006; 28: 32-48

Li C, Wang CJ, Kee YH. Burnout and its relations with basic psychological needs and motivation among athletes: A systematic review and meta-analysis. *Psy Sport Exercise*, 2013; 14(5): 692-700

Linnenbrink-Garcia L, Tyson DF, Patall EA. When are achievement goal orientations beneficial for academic achievement? A closer look at main effects and moderating factors. *Int Rev Soc Psy*, 2008; 21: 19–70

Lonsdale C, Hodge K, Rose E. Athlete burnout in elite sport: A self-determination perspective. *J Sports Sci,* 2009; 27(8): 785-795

Martín-Albó J, Nuñez JL, Navarro JG. Validation of the Spanish version of the Situational Motivation Scale (ESMI) in the educational context. *Span J Psychol,* 2009; 12(2): 799-807

Méndez-Giménez A, Cecchini JA, Fernández-Río J. Motivational Profiles and Achievement Goal Dominance in Physical Education. *Span J Psychol,* 2014; 17(36): 1-8

Moreira A, McGuigan MR, Arruda AF, Freitas CG, Aoki MS. Monitoring internal load parameters during simulated and official basketball matches. *J Strength Cond Res*, 2012; 26(3): 861-866

Morgan WP, Borg G. Perception of effort in the prescription of physical activity. In: *The humanistic and mental health aspects of sports, exercise and recreation*. Craig T. (ed). Chicago, American Medical Association. 126-223; 1976

Newton M, Duda JL, Yin Z. Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes. *J Sports Sci*, 2000; 18 (4): 275-290

Nicholls JG. Achievement motivation: conceptions of ability, subjective experience, task choice, and performance. *Psychol Rev,* 1984; 91: 328-346

Ntoumanis N. Empirical links between achievement goal theory and self-determination theory in sport. *J Sports Sci,* 2001; 19(6): 397-409. doi:10.1080/0264041013001 49357

Raedeke TD. Is athlete burnout more than just stress? A sport commitment perspective. *J Sport Exercise Psy*, 1997; 19: 396–417

Raedeke TD, Smith AL. Development and preliminary validation of an athlete burnout measure. *J Sport Exercise Psy,* 2001; 23: 281-306

Riediger M, Freund AM, Baltes PB. Managing life through personal goals: Intergoal facilitation and intensity of goal pursuit in younger and older adulthood. *J Gerontol,* 2005; 60 (2): 84-91

Rogalski B, Dawson B, Heasman J, Gabbett TJ. Training and game loads and injury risk in elite Australian footballers. *J Sci Med Sport*, 2013; 16(6): 499-503

Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 2000; 55(1): 68-77

Silva JM. An analysis of the training stress syndrome. *J App Sport Psychol,* 1990; 2(1): 5-20.

van de Pol PKC, Kavussanu M. Achievement goals and motivational responses in tennis: Does the context matter? *Psy Sport Exercise*, 2011a; 12 (2): 176-183

van de Pol PKC, Kavussanu M. Achievement motivation across training and competition in individual and team sports. *Sport Exerc Perform Psychol*, 2011b; doi:10.1037/a0025967

van de Pol PK, Kavussanu M, Ring C. Goal orientations, perceived motivational climate, and motivational

outcomes in football: A comparison between training and competition contexts. *Psy Sport Exercise*, 2012; 13(4): 491-499

Van Yperen NW. A novel approach to assessing achievement goals in the context of the 2x2 framework: Identifying distinct profiles of individuals with different dominant achievement goals. *Pers Soc Psychol B*, 2006; 32(11): 1432-1445

Van Yperen NW, Hamstra MRW, Van der Klauw M. To win or not to lose at any cost: the impact of achievement goals on cheating. *Brit J Manage*, 2011; 22: 5–15

Van Yperen NW, Orehek E. Achievement goals in the workplace: Conceptualization, prevalence, profiles and outcomes. *J Econ Psychol*, 2013; 38: 71-79

Van Yperen NW, Renkema LJ. Performing great and the purpose of performing better than others: On the recursiveness of the achievement goal adoption process. *Eur J Soc Psychol*, 2008; 38: 260-271

Vansteenkiste M, Mouratidis A, Van Riet T, Lens W. Examining correlates of game-to-game variation in volleyball players' achievement goal pursuit and underlying autonomous and controlling reasons. *J Sport Exercise Psy*, 2014; 36 (2): 131-145

Wiese BS, Freund AM, Baltes PB. Selection, optimization, and compensation: An action-related approach to work and partnership. *J Vocat Behav*, 2000; 57 (3): 273-300

Williams L. Contextual influences and goal perspectives among female youth sport participants. *Res Q Exercise Sport*, 1998; 69: 47-57

Zimmerman BJ. Investigating Self-Regulation and Motivation: Historical Background, Methodological Developments, and Future Prospects. *Am Ed Res J*, 2008; 45(1): 166-183

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