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Sport motivation and perceived motivational climate among members of a national para-swimming team

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Abstract

Swimming is one of the most popular sport domains due to its beneficial physiological effects in both typical and disabled individuals. However, although they are just as successful as their non-disabled counterparts, little is known about what motivates disabled swimmers. This study aimed to reveal the sport motivation and perceived motivational climate of these swimmers in comparison with similar data obtained from non-disabled swimmers. The sample included 18 members of the Hungarian national para-swimming team (M_{age} = 26.33 years, SD = 10.81), admitted to the 2016 IPC Swimming European Open Championships in Funchal, Portugal. Findings showed that athletes scored high on both intrinsic and extrinsic motivation, while also reporting a more task-oriented climate compared to the Hungarian average. Compared to men, women reported having environmental support for effort/ improvement to a higher degree, while men scored higher for intra-team member rivalry. Importantly, compared to their non-disabled counterparts, disabled swimmers reported higher levels of motivation and scored higher on perception of an ego-oriented climate. Taken together, our findings confirm the assumption that disabled and non-disabled athletes show more similarities than differences, but also point out the importance of research on the structure of highly successful athletes' motivations, which can provide unique insights regarding their potential.

Keywords: *sport motivation, perceived motivational climate, swimming, disabled athletes*

People with disabilities gain essential benefits from engaging in sports activities, which were found to improve their psychological well-being, facilitate rehabilitation, adaptation and reintegration and to prepare them to cope with various

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forms of prejudice threatening their self-esteem and perceived competence (Baĉanac, Milićević-Marinković, Kasum, & Marinković, 2014). Their opportunities to engage in sport activities have considerably expanded during recent decades, including the opportunity to engage in training for various competitions. The first Paralympic Games, the most important international competition for disabled athletes held immediately after the Olympic Games, held in 1960 involved 400 athletes from 23 countries, while the 2016 Games hosted 4328 athletes competing in 22 different branches of sport. Increasing participation in parasports is also well reflected in the academic sports literature, in which studies on disabled athletes published within the past 20 years addressed both physical and psychological factors such as motivation (Wu & Williams, 2001), athletic identity (Huang & Brittain, 2006) or personality traits and compared them to those of non-disabled athletes (De Bressy de Guast, Golby, Van Wersch, & Arripe-Longueville, 2013). However, much more research is needed in this field, especially if assuming differences between the two populations (DePauw & Gavron, 2005; Hanrahan, 2007).

Impaired physical functions require enabling of extra psychological skills in order to successfully cope with the given circumstances (Sherill, 1999). Motivation and an adequate motivational climate have crucial importance in such cases (Cox & Davis, 1992). Motivation mobilizes, orientates and maintains behavior, and it is responsible for organized and efficient behavior as well as for physiological arousal (Roberts & Treasure, 2001). Therefore, extrinsic and intrinsic motivations essentially influence one's activity in sports and induce different patterns of behavior. An individual with high intrinsic motivation shows higher performance orientation and faces a performance situation as a challenge. By contrast, high extrinsic motivation entails a higher level of state anxiety, performance in these circumstances is not considered a challenge and dropout occurs more frequently among such individuals (Gill, Gross, & Huddleston, 1983; Wong & Bridges, 1995). Individual differences in motivational structure have been related to both performance level and gender. For instance, elite athletes show higher levels of motivation and commitment than non-elite athletes (Halldorsson, Helgason, & Thorlindsson, 2012). Other findings suggest, however, that members of the most successful competitive sport teams show certain forms of both high intrinsic and high extrinsic motivation (Blegen, Stenson, Micek, & Matthews, 2012). Regarding gender differences, women typically report higher levels of intrinsic motivation than men (Chantal, Guay, Dobreva-Martinova, & Vallerand, 1996; Kingston, Horrocks, & Hanton, 2006; for an overview, see Clancy, Herring, MacIntyre, & Campbell, 2016).

Athletes' training environment and coaches play crucial roles in the development of intrinsic motivation (Theeboom, De Knop, & Weiss 1995). Cole (2002) argues that aside from coaches, others also play an important role in motivating athletes, especially those living in the environment where regular sports

activities take place. Two types of motivational climate may be distinguished according to whether it facilitates task-oriented or ego-oriented goal setting. Task-oriented athletes focus on maximum performance of tasks primarily driven by intrinsic motivation. Athletes pursuing ego-oriented goals are often inflexible since they encounter difficulties in situations where their abilities are compared to those of others. They are highly distressed when required to prove their abilities, especially when the outcome entails serious consequences. Furthermore, these athletes have a sense of success when they meet or outdo others in performance with less effort (Biddle, Soos, & Chatzisarantis, 1999; Spray & Wang, 2001). Thus, a task-involving motivational climate is more likely to elicit positive responses (motivation, persistence) while an ego-involving climate facilitates negative responses (self-defeating behaviour, anxiety, reduced performance; Jowett, 2003; Poczwardowski, Barot, & Henschen, 2002). Accordingly, athletes' basic psychological needs are best met by a supportive attitude shown by coaches (Adie, Duda, & Ntoumanis, 2008; Mageau & Vallerand, 2003). These findings equally hold true for male and female athletes, and secondary and tertiary students (Amorose & Andersen-Butcher, 2007; Amorose & Horn 2001; Hollembeak & Amorose 2005), as well as for Olympians and Paralympians (for an overview, see Jefferies, Gallagher, & Dunne, 2012).

Although some studies revealed motivational differences between disabled and non-disabled athletes (Martin, 1999; Martin & McCaughtry, 2004), most research findings suggest that Paralympians' motivation does not significantly differ from those of Olympians. Additionally, they do not differ in terms of performance goals or mood states (Henschen, Horvat, & Roswal, 1992; Perreault & Vallerand, 2007). Nevertheless, certain findings suggest that disabled athletes have a more distinctive motivational perspective on competition (Dieffenbach & Statler, 2012). Pensgaard, Roberts, and Ursin (1999) found that while disabled and non-disabled elite skiers showed similar motivational profiles, the former reported higher levels of satisfaction with their achievements and efforts. Garcia and Mandich (2005) revealed that Canadian wheelchair basketball players were much more motivated to play by their desire to achieve the greatest success possible and to represent their home countries in competition. Furthermore, Wheeler and colleagues (1999) have concluded from qualitative interview data that another essential motivational factor is the achievement of athletic identity, which enables more successful integration and formation of a non-disabled identity.

Regarding perceived motivational climate, Pensgaard et al. (1999) found no significant difference between Paralympians and Olympians. Likewise, in a study regarding Flemish basketball players, Fliess-Douer, Hutzler, and Vanlandewijck (2003) found that there were no significant differences between the two olympian groups. However, contradictory findings have been reported in this field as well. For instance, Sorensen (2003) revealed that disabled athletes scored higher in terms of perceiving a performance climate, yet these contradictory results could be

attributed to cultural differences (see Isogai, Brewer, Cornelius, Etnier, & Tokunga, 2003; Morgan, Sproule, McNeill, Kingston, & Wang, 2006).

Current study

In Hungary, swimming is the third most frequently chosen sport irrespective of gender (Neulinger, 2008). Furthermore, national swimming team members have so far won 25 gold medals at the Olympics, 21 at world championships and 76 at European championships, and junior swimmers are also world-class competitors now (Nagy, Ökrös, Sós, Földesi, & Egressy, 2016). Révész, Bognár, and Géczi's study (2007) suggests that, on average, it takes 9.29 years for a (Hungarian) swimmer to achieve a top rank at an international competition. Consequently, sustaining motivation throughout such a long period is a difficult task, which calls in for research on highly successful competitors' motivational structure in order to obtain findings crucial for junior sport education. First, this study aimed to investigate the sport motivation and perceived motivational climate of Hungarian disabled swimmers, while also looking at potential gender and age differences. The second aim was to compare the obtained data with those previously obtained from non-disabled swimmers (Révész, 2008; Nagy, Sós, Ökrös, & Szájer, 2014) in order to reveal differences and similarities between the two populations.

METHOD

Participants

The sample comprised of 18 licensed para-swimmers, pertaining to the Hungarian Swimming Association, 10 of whom achieved remarkable success at the 2016 Summer Paralympics in Rio (27.8% of the athletes were awarded medals including 1 gold, 3 silver and 5 bronze medals). The participants (9 females) aged between 14 and 47 years (M_{age} = 26.33 years, *SD* = 10.81) with 16.5 years of experience in swimming on average. The sample was divided into the following four age groups for the purposes of statistical data analysis: under 18 years (6 athletes), 18 to 25 years (5 athletes), 26 to 30 years (3 athletes) and above 30 years (4 athletes).

Due to the diversity of disabilities from visual impairment to limb amputation, several categorizations and classifications are applied in disabled sports in order to ensure fair competition (Sherrill, 1999). Similarly to the application of weight classes in wrestling, types and severity of disabilities are the most important factors underlying the definition of competitive levels, whose classification is based on regular assessment. The International Paralympic Committee (IPC) defined the following 10 impairment types, with which athletes are eligible to participate in the Paralympics: impaired muscle power, impaired passive range of movement, limb

deficiency, leg length difference, short stature, hypertonia, ataxia, athetosis, visual impairment, and intellectual impairment. In this classification system, athletes with reduced mobility and amputee sportspeople compete in classes 1 to 10, those with vision impairment or loss in classes 11 to 13, while those with intellectual impairment in class 14 (Jefferies et al., 2012). All participants in the sample were classified under competition classes 1 to 10 and under severity classes 3 to 10 (6 participants in S3-S5, 5 in S6-S8 and 7 in S9-S10).

Measures

Motivational structures were assessed using the Hungarian adaptation of the Sport Motivation Scale (SMS-28; Tsang, Szabó, Soós, & Bute 2005). Hungarian mean values on the 252 responses were as follows: amotivation M = 2.79 (SD = 1.33), extrinsic motivation M = 4.74 (SD = 1.05), and intrinsic motivation M = 5.02 (SD = 1.15). The scale consists of 28 items tapping intrinsic motivation, extrinsic motivation and amotivation. The intrinsic motivation scale comprises three subscales measuring the intrinsic motivation (IM) to know, IM towards accomplishments and IM to experience stimulation. The extrinsic motivation scale also includes three subscales assessing external regulation, introjection and identification, which are located in this order on a continuum of increasing self-determination ranging from purely extrinsic to purely intrinsic motivation (Deci & Ryan, 1991; Ryan & Deci, 2000; Vallerand, 1997).

Perceived motivational climate was assessed by the second version of the Perceived Motivational Climate in Sport Questionnaire (PMCSQ-2), which was adapted to Hungarian by Révész et al. (2014). Hungarian mean values based on 613 responses were the following: task oriented climate M = 4.11 (SD = .46), ego oriented climate M = 2.63 (SD = .58). The 33 items of the questionnaire compose the two scales of Task and Ego, each comprising three subscales. The Task subscale includes the subscales of cooperative learning, important role on the team, and effort/improvement, while the Ego scale comprises the punishment for mistakes, unequal recognition, and intra-team member rivalry subscales. The questionnaires provide self-report measures of perceived motivational climate and motivational structure, both requiring respondents to indicate their agreement with each statement on 5-point and 7-point rating scales, respectively.

Procedure

Participants completed the questionnaires in paper-and-pencil format under data collectors' supervision after a training session in September 2016. The obtained data were processed by means of the SPSS v. 22.0 software. In accordance with the homogeneity of variances of the studied groups' responses, between-participants

differences were analyzed by independent samples *t*-tests and one-way ANOVA tests. Within-participants differences were analyzed by paired samples *t*-tests, while data obtained in the present study were compared to data from previous studies by means of effect size tests.

RESULTS

First, the results showed that athletes scored high on both intrinsic and extrinsic motivation while they scored low on amotivation, presenting high levels of general motivation (see Figure 1A). Regarding perceived motivational climate, participants scored higher on perception of a task-involving climate as opposed to that of an ego-involving climate, and the same holds true for differences between means of the subscales (see Figure 1B).

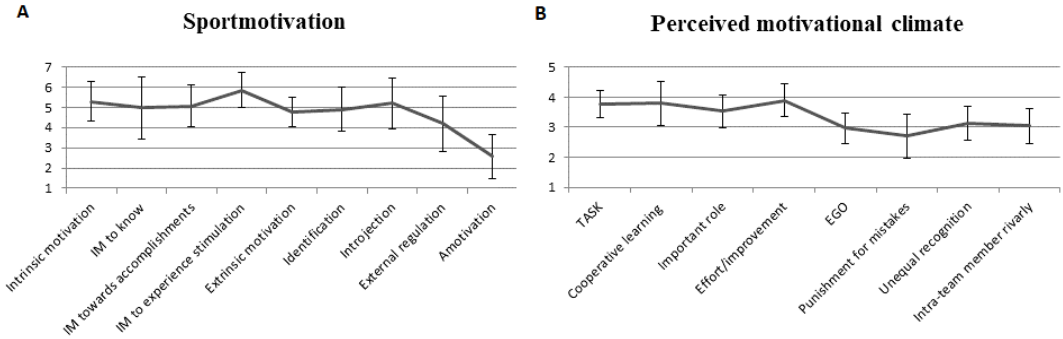

Figure 1. Mean values of the scales and subscales of the Sport Motivation Scale (A) and of the Perceived Motivational Climate in Sport Questionnaire-2 (B).

Scores provided by each questionnaire were analyzed with paired samples *t*-tests in order to establish the statistical significance of the obtained differences. All tested within-participants differences, that is, intrinsic motivation versus amotivation $t(17) = -7.049$, $p < .001$, extrinsic motivation versus amotivation $t(2) = 6.546$, $p < .001$, and perception of a task-involving climate versus that of an ego-involving climate $t(2) = 4.379$, $p < .001$, proved significant.

Figure 2 presents gender differences were analyzed by independent samples *t*-tests. Male and female participants showed a significant difference in effort/improvement ($t(16) = -0.797$; $p = .005$) and in intra-team member rivalry ($t(16) = 1.75$; $p = .022$). Higher environmental support for effort/improvement was perceived by women while intra-team member rivalry was rated higher by men.

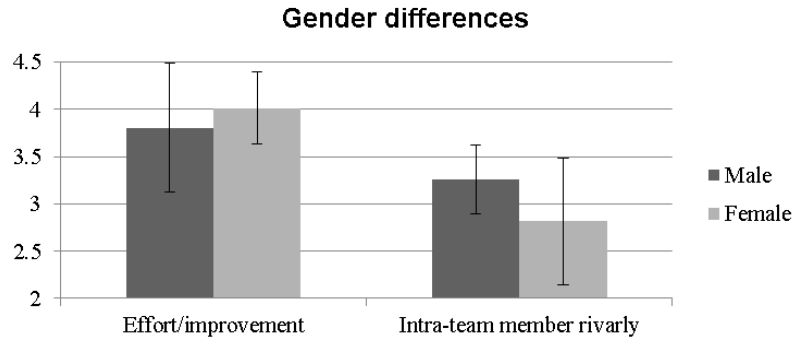

Figure 2. Gender differences in mean scores on two subscales of the PMCSQ-2

Age differences were analyzed by one-way ANOVA tests. Although no significant difference was found on either scale, marginally significant differences were obtained for perception of an ego-oriented climate ($F(3,17) = 2.682$; $p = .087$). Additionally, punishment for mistakes was found to marginally vary as a function of age ($F(3,17) = 2.955$; $p = .069$). As shown it Figure 3 the results revealed that scores regarding punishment for mistakes were highest in the age group 26 to 30 years.

Figure 3. Age differences in mean scores on one subscale of the PMCSQ-2.

Comparison between non-disabled and disabled swimmers

Data obtained on our sample of para-swimmers was compared to data obtained studies with typical professional swimmers, collected at different times. Standardized mean differences between the samples served as the basis for comparison. Such comparisons are ensured by comparing the Cohen's *d* effect size measure, which provides a standardized mean difference between two samples based on the ratio of the mean and standard deviation of a variable obtained in each sample.

Using the SMS-28 questionnaire, Révész (2008) found that elite swimmers' mean intrinsic motivation was 4.38 ($SD = 1.20$), while the same measure obtained in

this study for disabled elite swimmers was 5.30 (*SD* = .99). The obtained effect size (Cohen's *d* = 1.4) indicates an extremely high difference between the two samples. The results obtained for perceived motivational climate (PMCSQ-2) show that disabled elite swimmers scored lower on the effort/improvement subscale of the task-involving climate scale than did successful non-disabled swimmers studied by Nagy et al. (2014; Cohen's *d* = 1.03; see Table 1).

Similar results were obtained when comparing data within each gender group. Both male and female disabled elite swimmers scored significantly higher on the intrinsic motivation scale of the SMS-28 compared to the respective gender groups of non-disabled elite swimmers (Cohen's *d* = 1.0 for both genders). No significant difference was found between these groups in either extrinsic motivation or amotivation. Male but not female disabled elite swimmers scored lower on the effort/improvement subscale of the PMCSQ-2 compared to the respective gender group of non-disabled elite swimmers studied by Révész (2008). The obtained effect size (Cohen's *d* = 0.62) indicates a medium difference. Regarding perception of an ego-involving climate, male disabled elite swimmers as compared to male athletes studied by Révész et al. (2014) scored significantly higher on the ego-involving climate scale (Cohen's *d* = 1.03) as well as on its subscales of punishment for mistakes (Cohen's *d* = 0.9) and unequal recognition (Cohen's *d* = 1.06; see Table 2).

Table 1.
Mean scores of, and mean differences between, non-disabled recreational and competitive swimmers and disabled competitive swimmers on the scales and subscales of the SMS-28 and the PMCSQ-2.

Compared sample	Questionnaire	Scale	Recreational/ unsuccessful swimmers (n = 336/41)	Competitive/ successful swimmers (n = 88/37)	Disabled competitive swimmers (n = 18)	Cohen's *d*
Révész (2008); *n* = 424	SMS-28	Intrinsic motivation	4.48±1.30	4.38±1.20	5.30±0.99	1.4
		Extrinsic motivation	4.55±1.09	4.59±1.01	4.77±0.75	
		Amotivation	2.42±1.37	2.40±1.36	2.57±1.10	
Nagy, Sós, Ökrös & Szájer (2014) *n* = 78	PMCSQ-2	TASK	3.63±0.85	3.94±0.71	3.77±0.46	1.03
		Cooperative learning	3.40±1.03	3.90±0.81	3.79±0.75	
		Important role	3.50±0.77	3.53±0.53	3.53±0.55	
		Effort/improvement	3.99±0.75	4.40±0.41	3.90±0.55	
		EGO	2.47±0.92	2.98±0.78	2.96±0.52	
		Punishment for mistakes	2.03±0.91	2.65±0.58	2.70±0.74	
		Unequal recognition	2.42±0.83	3.07±0.89	3.14±0.56	
		Intra-team member rivalry	2.95±1.02	3.21±0.87	3.04±0.57	

Note. SMS-28 = Sport Motivation Scale, PMCSQ-2 = Perceived Motivational Climate in Sport Questionnaire-2, TASK = task oreinted climate subscale, EGO = ego oriented climate subscale

DISCUSSIONS

This study aimed to reveal Hungarian national para-swimming team members' motivational structure and perceived motivational climate, and the obtained data were compared to those previously obtained from non-disabled swimmers in order to reveal possible differences between the two populations. Although some of the previous research findings indicated motivational differences between disabled and non-disabled athletes (Martin, 1999; Martin & McCaughtry, 2004), most studies found no significant difference in either motivations or perceived motivational climate between Paralympians and Olympians (Pensgaard et al., 1999; Fliess-Douer, Hutzler, & Vanlandewijck, 2003; Sorensen, 2003).

The present study has revealed several similarities as well as differences between the two groups. The main findings suggest that while they do not differ from their non-disabled counterpartes in terms of extrinsic motivation or amotivation, disabled athletes are mostly driven by higher intrinsic motivation. Additionally, results on perceived motivational climate suggest that a higher level of ego-orientation is found in disabled athletes compared to their non-disabled counterparts, especially in male athletes. The explanation for these findings is that predetermined performance goals serve as a powerful external regulator in elite sports, while reaching maximum performance indispensably requires intrinsic motivation in addition to extrinsic motivation. A balance between these two factors is thought to prevent burnout, amotivation, and experiencing severe anxiety (Balyi, Way, & Higgs 2013).

This assumption has been corroborated by a study done with national wrestling team members, who showed simultaneously high intrinsic and extrinsic motivation (Szemes et al., 2016). Reduced physical functions require athletes to mobilize increased intrinsic motivational forces in order to cope with the given circumstances (Sherill, 1999). The motivational conditions of performance in sports could be considerably improved by influencing athletes' motivational climate. The obtained findings suggest that disabled athletes' training conditions are different from those of non-disabled athletes, and these differences have psychological effects as well. Unfavourable psychological processes such as dissatisfaction with training conditions and competition opportunities have likewise unfavorable effects on performance, which calls for special attention to preventing these effects. In Hungarian swimming, a new generation of coaches is currently gaining ground, who may favourably influence motivational processes. This expectation is supported by findings reported by Révész, Bognár, Csáki, and Trzaskoma-Bicsérdy (2013), who have revealed that the previously dominant autocratic coaching style is being replaced by a more democratic approach, in which coaches develop partnership with athletes and provide individual care. These changes are perceived by both coaches and athletes of various age groups, especially in cases when different age groups train together. However, training conditions in para-swimming

need improvements on an even larger scale. In recent years, disabled athletes have also been provided with training and competition opportunities enjoyed by non-disabled athletes such as training camps at domestic and warm-climate foreign locations and participation in international competitions. This is an essential positive development, which has presumably contributed to Hungarian Paralympians' recent success. Nevertheless, profound dissatisfaction is still aroused by the unequal distribution of funds, due to which disabled athletes' financial support amounts to not more than one quarter of that provided for their non-disabled counterparts.

Table 2.
Mean scores of, and mean differences between, gender groups of non-disabled and disabled competitive swimmers on the scales and subscales of the SMS-28 and the PMCSQ-2.

Compared sample	Questionnaire	Scale	Non-disabled swimmers		Disabled swimmers		Cohen's *d*
			Male (n = 214)	Female (n = 210)	Male (n = 9)	Female (n = 9)	
Révész (2008); *n* = 424	SMS-28	Intrinsic motivation	4.34±1.29	4.56±1.26	5.13±1.01	5.47±1.00	1.0
		Extrinsic motivation	4.59±1.12	4.53±1.03	4.78±0.68	4.76±0.85	
		Amotivation	2.36±1.32	2.47±1.40	2.75±1.21	2.39±1.02	
	PMCSQ-2	TASK	3.87±0.53	3.96±0.49	3.67±0.54	3.88±0.36	
		Cooperative learning	3.68±0.97	3.83±0.92	3.56±0.74	4.03±0.72	
		Important role	3.54±0.71	3.66±0.63	3.53±0.63	3.53±0.49	
		Effort/ improvement	4.18±0.50	4.22±0.48	3.81±0.68	4.01±0.38	0.62
		EGO	2.53±0.66	2.60±0.73	3.13±0.49	2.78±0.52	1.03
		Punishment for mistakes	2.23±0.77	2.32±0.77	2.93±0.77	2.48±0.67	0.9
		Unequal recognition	2.54±0.83	2.67±0.93	3.25±0.46	3.03±0.65	1.06
		Intra-team member rivalry	3.09±0.78	2.97±0.93	3.26±0.36	2.81±0.67	

Note. SMS-28 = Sport Motivation Scale, PMCSQ-2 = Perceived Motivational Climate in Sport Questionnaire-2, TASK = task oreinted climate subscale, EGO = ego oriented climate subscale

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