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# Motivational factors for participation in mass running events: a comparative study of females and males with physical disabilities

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## Abstract

**Background** While the motivations of individuals without impairments for participating in mass running events are well-documented, there is a lack of current research exploring why people with physical disabilities engage in these events. This study aims to identify the motives for participation among people with physical disabilities, taking into account factors such as sex, age (emerging adults vs. middle-aged adults), time since injury or illness, and mode of movement during the run (wheelchair vs. standing).

**Methods** In total, 119 participants (51.3% male; mean age of 36 years) completed the Polish version of the Motivations of Marathoners Scale questionnaire. The study was carried out using the diagnostic survey method. Online survey forms were sent to 31 organizations from the Greater Poland region, including sports clubs for individuals with disabilities and runners' clubs open to both individuals with and without disabilities.

**Results** This study uncovered distinct motivational differences based on age and mode of movement during the run. For participants aged under 35 compared to those over 35, significant differences were noted in the motives of recognition ( $Z = -2.834, p = 0.005$ ) and affiliation ( $Z = -2.534, p = 0.011$ ). Similarly, when comparing wheelchair users with standing participants, notable disparities were observed in motives related to weight ( $Z = -5.109, p < 0.001$ ) and personal goal achievement ( $Z = -2.613, p = 0.009$ ). There was also a significant positive relationship between the time since injury or illness and five out of nine subscales of the Motivations of Marathoners Scale (i.e. affiliation:  $r = 0.256, p = 0.007$ ; recognition:  $r = 0.239, p = 0.011$ ). The study found no significant differences in the motivations between men and women with physical disabilities for participating in mass running events.

**Conclusions** When organizing and promoting running events for people with physical disabilities, it is important to consider factors such as the age of runners, time since injury, and mode of movement during the run. Additionally, it should be noted that no significant differences are found based on gender, indicating that both male and female participants are driven by similar motivations when it comes to participating in these events.

**Keywords** Mass running events, People with physical disabilities, Motivations, Participation motives

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## Background

Mass running events (MREs) are organized sports events where numerous participants simultaneously engage in running races over specified distances. These events exemplify contemporary forms of sports and recreational activity, combining elements of unwinding and relaxation with sensation-seeking and excitement [1]. MREs, such as marathons and half marathons, are an attractive form of physical recreation practiced by a growing number of sports enthusiasts and serve as sports tourism attractions in many cities around the globe. The motives for participating in MREs, have been extensively studied. However, there is a notable lack of recent research on the reasons why people with physical disabilities (PWPD), particularly those using wheelchairs, choose to participate in these events. An increasing number of people worldwide are striving to improve their health and fitness through long-distance running, generating a significant social phenomenon [2]. Regular runners lead a regulated lifestyle, enjoy better health [3] and, in accordance with their training regimens, often feel the need to participate in running events, such as marathons, half marathons, triathlons or even ultramarathons [4, 5]. Researchers have sought to uncover the motivations behind the need to run marathons, a strenuous and mentally demanding task that may incur significant personal and financial costs [6]. The Motivation for Marathoners Scale (MOMS), developed by Masters et al., is a key diagnostic tool specifically designed to understand marathoners' motivations [7, 8]. The emergent data indicated differences in running motivations based on gender [9], age [10], nationality [11], type of running event (i.e., traditional versus non-traditional) [12], runners' place of residence (e.g., local runners vs. sports tourists) [13], and years of running experience [14].

To gain better insight into motivations for running, researchers have appraised runners' motives through the conceptual framework of the Self-Determination Theory (SDT) [7]. Above all, SDT is one of the most frequently used theories of motivation in the field of sports activities and allows for a comprehensive characterization of motivation, including its most important components [15–18]. It is noted that theory-based research is needed when studying the motivation of individuals who participate in adapted sport [19]. And because the motivation for sport participation among people with disabilities is a multidimensional phenomenon [20], SDT seems most appropriate [19, 21, 22].

It is worth emphasizing that the authors of MOMS highlighted the multifaceted nature of motivation for marathon running [8]. Additionally, the authors of studies describing the motives for participation in running events, including those utilizing MOMS in their research, frequently referred to SDT [7, 23, 24]. Most

of the research on SDT in disability sport has focused on the basic needs theory, which proposes that people have basic innate needs across three areas: autonomy, competence, and relatedness [19]. Based on research in both disability and able-bodied sport, it is known that sport is a setting that enables participants to meet their SDT basic needs [19]. Evidence exists that the supportive environment created by specialists and participants associated with the sport setting (e.g., organizers, coaches, peers) could foster the satisfaction of SDT basic needs (competence, autonomy, and relatedness) [19, 21, 25].

Taking the above into account, we decided that SDT would be a good theoretical background for our research on the motives for participation of PWFD in MREs. According to SDT, people's motivational behavior varies with the extent of their regulation of self-determination. Ryan and Deci [26] emphasized that motivation can be assessed on a continuum by evaluating satisfaction of three key psychological needs: competence, autonomy, and relatedness. Competence is associated with satisfaction of being efficacious and demonstrating mastery, autonomy refers to the need to be self-determining or in charge of one's own behavior, and relatedness is the need to feel connected to other people. Relevantly, items of the MOMS, measured in nine dimensions, reflect motives for running, as expressed in the three-need model postulated in the SDT [7]. MOMS' affiliation and recognition represent motives that stem from the SDT's need for relatedness; MOMS' personal goal achievement and competition may refer to the SDT's need for competence; and the remaining MOMS items align with the SDT's need for autonomy. Thus, it can be concluded that by using MOMS we have a chance to explore whether individuals with disability expect their SDT basic needs to be fulfilled by participating in MREs.

Previous studies reviewing motivations for sport participation among people with disabilities have indicated that participants value competition, improved fitness, and socializing [19]. A study by Szyman and Molik [27] examining wheelchair basketball athletes indicated that top motives included reasons related to competitive sport, e.g., "improve my ability," whereas other motives related to the excitement of sport and enjoyment derived from interacting with teammates. Furthermore, Furst et al. [28] revealed that adult wheelchair athletes who participated in triathlons most often did so for fun (41%), physical development/health improvement (36%), love of competition (27%), and socializing (27%). Interestingly, different groups of athletes report slightly different motives. The results from Brasile and Hedrick [20] showed that the highest-ranked motivation aspects reported by wheelchair basketball players reflected their enjoyment, excitement of play and focus on testing and improving their abilities—in other words, sports-related

aspects. Similarly, a study on wheelchair rugby players showed that players drew their motivation chiefly from team interactions and socializing with friends [29]. Moreover, the range of studies on motivation for sport among PWPDP suggest that motivation is shaped by factors such as the type of disability (congenital vs. acquired) [30], stage of sports career (initiation, development, mastery) [31], age [20], gender [32], severity of disability [33], type of sport discipline [29], and level of participation (recreational vs. competitive vs. elite) [34].

While individuals without disabilities are well-studied, and those with disabilities are increasingly researched in terms of their physical activity, sport participation, and psychological aspects [35–39], the area of motivation for participation in MREs among people with disabilities has not been explored. This is particularly surprising given the growing popularity of this activity. Most previous studies on motivation in people with disabilities have primarily focused on competitive athletes. In contrast, MREs organized in Poland are increasingly attended by both professionals and amateurs, attracting individuals without disabilities and PWPDP alike. Our study aims to address this research gap by providing data on the reasons why PWPDP participate in MREs. Therefore, the purpose of this study was to establish the motives for PWPDP's participation in MREs. We also aimed to identify factors differentiating these motives. Since previous research on runners without disabilities demonstrated gender- and age-dependent differences in running motivation [9, 10], we hypothesized that these factors would also differentiate the motives of PWPDP participating in MRE. Due to the specific nature of our study sample (PWPDP), we decided to analyze these motives also in relation to two factors connected with disability: time since injury/illness and mode of movement during the run. We assumed that an increased time since injury or diagnosis would correlate with higher motivation scores in the area of socialization [40]. We also presumed that different modes of movement during running (wheelchair/standing), reflecting the severity of a participant's disability, would be associated with different motives for participating in MREs.

## Methods

### Procedure

The online study utilized the diagnostic survey method. Survey forms were distributed to 31 organizations in the Greater Poland region, including sports clubs for PWPDP, runners' clubs, and running events open to individuals with and without disabilities. Due to the COVID-19 pandemic, a questionnaire specifically prepared for the study using Google Forms was distributed electronically after prior contact with organizations via phone and email. One of the co-authors was responsible for contacting the

organizations, each time informing their representative or the person designated for research communication about the study's purpose and inclusion criteria, ensuring that the questionnaire was distributed only to runners who met these criteria. This was intended to minimize the risk of participation by random or ineligible individuals. Throughout the entire study period, the co-author was available to all organizations, providing answers to any questions that arose during the research. Given the online format of the survey, the researchers had access to the survey results immediately after the respondents completed the questionnaires. Individuals meeting the following inclusion criteria were invited to participate in the study: (1) at least 18 years old, (2) congenital or acquired physical disability, (3) prior participation in at least one MRE (over distances ranging from 10 km to a marathon), (4) independent participation in a running event, either in a standing position (using appropriate supporting equipment if necessary, such as a prosthesis or orthosis) or in a manual wheelchair, and (5) the ability to comprehend and independently respond to written questions. The data collection took place from December 2020 until March 2021. The analysis included respondents who clearly specified the type of physical disability by selecting one of the given categories in the question about the type of physical disability (see Table 1).

The study was conducted in accordance with the Declaration of Helsinki, with all participants treated according to the American Psychological Association's ethics code. The study is not a medical experiment and, in accordance with the rules in force in Poland, it does not require formal ethical approval from the Bioethics Committee [41]. The Bioethics Committee does not require applications for surveys consisting of the use of standardized surveys, used in accordance with their intended purpose, when the research will develop statistically selected elements of the survey. The respondents were informed about the nature and aims of the survey. The survey was anonymous, voluntary, and confidential. Our questionnaire clearly indicated in the headline that its completion was taken as consent to participate in the study. The introductory statement clearly indicated that returning the completed survey was tantamount to expressing informed and voluntary consent to participate in this study, to the anonymous processing of the data collected in this way, and to the publication of the research results. Permissions to conduct the study were obtained from representatives of 31 organizations from the Greater Poland region participating in the study.

### Measures

The study used the Polish-adapted version of the MOMS [42], with permission obtained from the author. The MOMS contains 56 items, with nine dimensions (or

**Table 1** Socio-demographic characteristics of PWPDP running in MRE (N = 119)

Variables	People with physical disabilities (N = 119)	
	N	(%)
<i>Gender</i>		
Men	61	(51.3)
Women	58	(48.7)
<i>Age</i>		
< 35 years	52	(43.7)
≥ 35 years	67	(56.3)
<i>Education</i>		
Primary	7	(5.9)
Vocational	14	(11.8)
Secondary	55	(46.2)
Bachelor degree	14	(11.8)
Master degree	29	(24.4)
<i>Employment status</i>		
Student	14	(11.8)
Employed	57	(47.9)
Unemployed	14	(11.8)
Pensioner	34	(28.6)
<i>Participation in MRE</i>		
Marathons	20	(16.8)
Half-marathons	38	(31.9)
15 km runs	31	(26.1)
10 km runs	52	(43.7)
<i>Disability</i>		
Paraplegia	20	(16.8)
Tetraplegia	4	(3.4)
Spina bifida (myelomeningocele)	4	(3.4)
Cerebral palsy	6	(5.0)
Amputation of one upper limb	18	(15.1)
Amputation of both upper limbs	2	(1.7)
Amputation of one lower limb	9	(7.6)
Amputation of both lower limbs	6	(5.0)
Multiple sclerosis	41	(34.5)
Muscle dystrophy	8	(6.7)
Poliomyelitis	1	(0.8)
<i>Assistive device use during the run</i>		
Manual wheelchair	47	(40.2)
Orthosis, prosthesis	10	(8.5)
None	60	(51.3)

specific reasons for running) divided into broader groups of four motives:

1. Physical health: general health orientation (six items) and weight concerns (four items),
2. Achievement: personal goal achievement (six items) and competition (four items);
3. Social motives: recognition (six items) and affiliation (six items),
4. Psychological motivations included psychological coping (nine items), self-esteem (eight items), and life meaning (seven items).

Responses to items on the MOMS are provided on a 7-point Likert-type scale, where 1 indicates no

importance to the respondent and 7 represents the highest level of importance. The MOMS has been extensively used in previous research [6, 9, 10]. The measure has been previously adapted to local conditions [4]. In our study, the internal consistency of all the MOMS subscales was assessed as good, with Cronbach's alpha ranging from 0.763 to 0.975.

Demographic variables such as gender, age, educational level and employment status, as well as the type of MRE, type of disability, time since injury or illness, and use of assistive devices during the run (mode of movement during the run), were collected using a self-designed questionnaire. The details are presented in Table 1.

### Data analysis

Descriptive statistics (mean, standard deviation, frequency, percent) were used to describe the demographic characteristics of the study participants and their MOMS scores. Cronbach's alpha coefficient ( $\alpha$ ) was calculated to measure the internal consistency of the MOMS subscales. The variable age (years) was dichotomized into the following groups: (1) emerging adults, i.e., less than 35 years, and (2) middle-aged adults, i.e., 35 years or more. This approach reflects Erickson's stages of psychosocial development, matching a specific series of phases in the human life cycle [43]. This division into age groups has been used in other similar studies on runners' motivation [4]. Regarding the question "What equipment do you use during the marathon run?", the categories "other supporting equipment, e.g., prosthesis, orthosis" ( $N=10$ ) and "none" ( $N=60$ ) were merged into one called "standing" participants ( $N=70$ ); no differences in the MOMS subscales were registered between the merged groups. Spearman's rank correlation coefficients ( $r$ ) were used to assess the significance and power of relationships between motivation (the MOMS subscale scores) and the time since injury or illness. Mann-Whitney tests ( $Z$ ) were performed on all of the MOMS subscales to assess differences between genders (male/female), age groups (emerging adults/middle-aged adults) and mode of movement during the run (wheelchair/standing). To describe differences related to age groups and methods of mobility on the MOMS subscale scores, the effect sizes (Cohen's  $d$  coefficient) were calculated as the difference between means divided by the within standard deviation of the difference [44]. Using Cohen's criteria, effect sizes  $\geq 0.20$  and  $< 0.50$  were considered small, those  $\geq 0.50$  and  $< 0.80$  were considered medium, and those  $\geq 0.80$  were considered large. The level of statistical significance was set at  $p < 0.05$ . All the statistical analyses were performed using the Statistical Package for the Social Science (IBM SPSS Statistics, version 26).

**Table 2** Differences in motivation (the MOMS subscales scores) between runners by age group ( $N=119$ )

MOMS	Age < 35 ( $N=52$ )		Age $\geq$ 35 ( $N=67$ )		Test Z	P value
	Mean	SD	Mean	SD		
Health orientation	4.69	0.97	4.78	1.04	-0.075	0.940
Weight concern	3.89	1.52	3.79	1.55	-0.622	0.534
Personal goal achievement	4.13	1.30	4.32	1.25	-0.629	0.529
Competition	3.10	1.67	3.63	1.58	-1.807	0.071
Recognition	3.81	1.41	4.50	1.42	-2.834	<b>0.005</b>
Affiliation	3.43	1.38	4.15	1.55	-2.534	<b>0.011</b>
Psychological coping	4.80	1.00	4.90	0.79	-0.022	0.982
Life meaning	4.32	1.02	4.54	0.93	-1.021	0.307
Self-esteem	4.90	1.03	5.14	0.91	-1.263	0.207

Bold values indicate statistically significant results

**Table 3** Differences in motivation (the MOMS subscales scores) between runners by the mode of movement during the run ( $N=119$ )

MOMS	Wheelchair ( $N=47$ )		Standing ( $N=70$ )		Test Z	P value
	Mean	SD	Mean	SD		
Health orientation	4.56	1.07	4.91	0.86	-2.503	<b>0.012</b>
Weight concern	3.06	1.45	4.43	1.29	-5.109	<b>&lt;0.001</b>
Personal goal achievement	3.96	1.31	4.49	1.15	-2.613	<b>0.009</b>
Competition	3.29	1.64	3.55	1.61	-1.036	0.300
Recognition	4.54	1.34	4.02	1.47	-1.950	<b>0.051</b>
Affiliation	4.08	1.56	3.75	1.44	-1.102	0.270
Psychological coping	4.81	0.83	4.94	0.84	-1.578	0.115
Life meaning	4.39	1.02	4.54	0.86	-1.476	0.140
Self-esteem	5.00	0.94	5.12	0.92	-0.959	0.338

Bold values indicate statistically significant results

## Participants

A total of 119 PWPDP participated in this study (51.3% male). The mean age of the study participants was 36 years ( $SD=8.7$ ; range: 18–56). The majority of the respondents had secondary education (46%) and were professionally active (48%). The PWPDP who participated in the study most often took part in 10-km runs (44%) and half-marathons (32%). The most frequent disabilities/illnesses declared by respondents were multiple sclerosis (35%) and paraplegia (17%). The mean time since injury or illness was 10 years ( $SD=9.2$ ; range: 1–43). 40% of the participants used manual wheelchairs (wheelchair), while 60% ran without any assistive devices or reported using other supporting equipment, e.g., prostheses or orthoses, during the run (standing). The detailed sociodemographic characteristics of the respondents are presented in Table 1.

## Results

### Motivation for PWPDP to participate in MRE

According to the results of our study, the motivations of female are not different from those of male with disabilities ( $p>0.05$  for all the MOMS subscales). Regardless of sex, PWPDP indicated that self-esteem, psychological coping and health orientation were their most important motives for participating in MREs. Having analyzed the relationship between age and the motivations

of participants with disabilities, we found that the motives for recognition ( $p=0.005$ ,  $d=0.49$ ) and affiliation ( $p=0.011$ ,  $d=0.49$ ) were more important for older ( $\geq 35$  years) than for younger participants ( $<35$  years) (Table 2). Considering the criterion of mod of movement during running events (wheelchair vs. standing), our data revealed differences among the four groups of motives (Table 3). Health orientation ( $p=0.012$ ,  $d=0.36$ ), weight concern ( $p<0.001$ ,  $d=1.00$ ) and personal goal achievement ( $p=0.009$ ,  $d=0.43$ ) were considered more important by people who did not use wheelchairs during runs. However, recognition was deemed more important by PWPDP who used wheelchairs during runs ( $p=0.051$ ,  $d=0.37$ ).

The criterion of time since injury or illness was significantly associated with the following groups of motives: health orientation, competition, recognition, affiliation and self-esteem (Table 4). For all these motives, a longer experience of disability was positively associated with the importance attached to the abovementioned motives.

## Discussion

The aim of our study was to identify the motives for PWPDP's participation in MREs in relation to their sex, age, time since injury/illness, and mode of movement during the run. Participants reported self-esteem, psychological coping, and health orientation as their



**Table 4** Correlation between MOMS and the time since injury or illness in PWPDP ( $N=119$ )

MOMS	Time since injury or illness	
	r	P value
Health orientation	0.229	<b>0.016</b>
Weight concern	0.057	0.553
Personal goal achievement	0.117	0.224
Competition	0.188	<b>0.049</b>
Recognition	0.239	<b>0.011</b>
Affiliation	0.256	<b>0.007</b>
Psychological coping	0.024	0.803
Life meaning	0.020	0.835
Self-esteem	0.208	<b>0.029</b>

Bold values indicate statistically significant results

primary motivations for running, all seemingly driven by their need for autonomy [16]. Our results are consistent with those that validate the widespread belief that PWPDP engage in sports to enhance their fitness (thereby improving their daily living activities) and to improve their psychological competencies, allowing them to cope with difficult life situations (thereby improving their ability to manage life challenges) [33, 45]. All categories of motives examined exhibited mean values above the midpoint of the scale, confirming that the sports motivations of PWPDP are multidimensional [19, 20, 29, 45].

Our results are partially consistent with previous findings in this area: health reasons were identified as the most important motivations for practicing sport in wheelchair basketball players [33], wheelchair athletes participating in triathlons [28], Dutch Paralympic athletes [45] and athletes playing boccia [29]. It is important to note that, in addition to the motivations assessed for participating in MRE, another significant factor is the level of engagement, which varies from recreational to competitive to elite. For many runners, mass running is no longer a mere physical activity but a lifestyle, shaping their social relationships and improving their quality of life and mental well-being [1]. Since many people report their need to break down their mental barriers and improve their self-esteem, our research group attached great importance to running as a means to improve self-esteem and a psychological coping mechanism.

In our study, we found no difference in the motivations between female and male participants with disabilities. This contrasts with the findings by Zhou et al. [46], which suggested that male and female runners in China have differing motives for engaging in sports. A similar study on the motivations of elite wheelchair athletes from the United States, Great Britain, and Japan indicated sex differences in motivational factors like friendship, achievement, and status [32], with the most pronounced differences observed between male and female Japanese athletes. Furthermore, our findings diverge from those

of previous studies on the motivations of able-bodied runners. For instance, León-Guereño et al. [47] noted that male amateur runners focused more on personal goal achievement and competition when participating in marathons, whereas female amateur runners emphasized psychological coping. Greek female marathon runners also reported a higher importance placed on psychological coping, personal goal achievement, and self-esteem compared to their male counterparts [47]. Additionally, an American study conducted twenty-five years ago found distinct motivational differences between genders, with concerns such as weight, affiliation, self-esteem, life meaning, and psychological coping being more significant for women [48]. Studies have consistently shown such gender differences in motivations across various types of MRE and populations, including goal orientation, ego-related goals, weight concerns, affiliation, and self-esteem [4, 10, 13, 49].

According to SDT, studies on runners without disabilities indicate that women usually report running motives connected to the need for relatedness and autonomy, whereas men report motives related to their need for competence. It is puzzling why the respondents with disabilities in our study did not report these gendered differences. As we mentioned earlier, the SDT postulates that environmental factors responsible for the satisfaction of three key needs (competence, autonomy, and relatedness) produce self-determined motivational consequences. Therefore, it is likely that the specific environmental challenges faced by PWPDP made our respondents attach greater importance to motives that stem from their need for autonomy, regardless of their gender. On the other hand, it is possible that our respondents held specific social expectations about their sport participation, hoping that their participation in a given sport discipline (e.g., marathon running) would enable them to meet their specific needs (e.g., autonomy) [50]. However, this issue warrants further investigation.

Furthermore, we found that recognition and affiliation were more significant motivations for individuals aged 35 and older compared to those younger than 35. This result partially matches those of previous studies. In general, recognition (a wish to, e.g., earn respect for one's peers or people in general, win praise) matters a great deal for young people, while affiliation (motivations such as, e.g., to participate in activities with family or friends, to meet people and share experiences) means more for older people [48]. Our study proved that seniors valued affiliation and recognition, capitalizing on their need for relatedness. In a similar vein, studies on wheelchair basketball and rugby players have shown that increasing age is positively correlated with increased social motivation (e.g., "being with friends") [29]. Similarly, Brasile and Hedrick [20] also found positive correlations between the

age of wheelchair basketball players and the stress they experienced in their responses on social aspects behind their motivation for participation. If younger runners meet new people on the internet or at the university, then older runners have fewer opportunities for socializing and winning social prestige. According to a diagnostic survey among marathon runners in Poland, age influenced responses in three dimensions: the stated importance of health orientation and affiliation correlated with increased age, while self-esteem was given the greatest importance in the 19–25 age group [47]. A study conducted by León-Guereño et al. [47] established that older runners reported greater significance of affiliation as a motive; our study corroborated this finding, with affiliation reportedly more important for runners aged 35 years or older in comparison with the younger cohort. Generally, previous studies among people without disabilities have shown that the age range of runners is important in regard to their participation motives, especially with regard to their achievement motives, such as competition and personal goal achievement, which are more often linked to younger athletes [6, 9, 10, 51].

Regarding the criterion of mode of movement during the run (wheelchair vs. standing), we identified differences across four groups of motives. Health orientation, weight concerns and personal goal achievement were more important for people who did not use a wheelchair during the run, whereas wheelchair users reported greater importance of motives associated with recognition. Differences in the motives of both compared groups of participants may result from the greater number of additional difficulties wheelchair users had to overcome in order to take part in the MREs (for example, reaching the venue with their expensive equipment and/or an assistant). Previous research shows that athletes with disabilities, especially those with significant and visible disabilities, face various barriers when participating in sports [21, 45, 52, 53]. It is therefore not surprising that motives related to recognition turned out to be more important for the wheelchair users. It is worth recalling here that sports can help people with disabilities decrease stigma and promote feelings of independence, strength, and self-efficacy. Additionally, sports can empower them both psychologically and socially, enhancing their self-determination and control over their lives at various levels [50]. On the other hand, the desire for recognition among participants may be driven by their need to challenge what is often described as the media's marginalization of sports events for athletes with disabilities. These athletes frequently report that despite their achievements, they receive only limited prestige and social acknowledgment [54]. Moreover, some audiences still perceive sports events involving athletes with disabilities merely as entertainment and recreation, not recognizing

them as legitimate sports [55, 56]. This perception contributes to the tangible social marginalization of athletes with disabilities, which is part of the wider issue of social exclusion faced by people with disabilities [50].

Our results also showed that time since injury or illness influenced the reported scores for the following groups of motives: health orientation, competition, recognition, affiliation and self-esteem. The research showed that the longer the disability experience lasted, the more important the abovementioned motives became. It is worth emphasizing that within the SDT paradigm, the abovementioned motives belong to all three key needs (autonomy, competence and relatedness). One may be tempted to conclude that as newly impaired athletes adapt to their disability, their expectations for the potential benefits that sport can provide soar; consequently, their motivations become stronger and more complex. Moreover, as shown by previous studies, the motivations of people with disabilities for sport participation are dynamic and can shift over time [57].

#### **Study limitations**

We recognize certain limitations of this study. First, our main limitation was that we did not collect data through disability classification or disability assessment. The next limitation concerned the type of discipline—we focused on runners only—and the stage of sport careers—for which we did not interview professionals. Finally, our research was limited to only one region of Poland—Greater Poland—due to the location of our University and our established contacts with mass event organizers in this area. In future research, it would be interesting to investigate whether the motives for PWPDP's participation in MREs differ in other regions or countries with varying cultural attitudes towards disability and sports.

#### **Study implications**

The differences in motivation we identified between running PWPDP participating in MREs are not only relevant for athletes but also hold even greater significance for event organizers, coaches, sports psychologists and health professionals. By utilizing our study, these stakeholders can gain a deeper understanding of what motivates PWPDP to participate in MREs, how to help them achieve their goals and how to challenge them to meet their SDT basic needs. Recently, there has been an upsurge in the popularity of running, with many runners most likely looking for physical and mental training specialists to help them overcome new personal fitness challenges. Future studies should examine other sociodemographic factors that may contribute new information about the studied groups. Furthermore, another promising avenue of research would be to assess the motivations of participants in MREs among PWPDP in the context of

their disability (congenital vs. acquired; PWPDP vs. visually impaired individuals vs. people with hearing impairments), stage of sports career (initiation, development, mastery), severity of disability, type of discipline, and sport engagement level (recreational vs. competitive vs. elite).

## Conclusion

The most important motives for PWPDP to participate in MREs, regardless of sex, are connected with self-esteem, psychological coping, and health orientation, all stemming from the need for autonomy. The lack of significant differences in the motives between male and female can be explained by the specific environment created within MREs, which promotes individuals with specific social expectations about their sport participation. However, this requires in-depth analysis in further research. Moreover, our research shows that all studied categories of motives are relatively important, confirming that the sports motivations of PWPDP are multidimensional. To effectively promote participation in MREs among PWPDP, it is essential to consider demographic factors such as age and health status, including the time since injury and severity of disability, which impact the mode of movement during the run. This approach will enable organizers to better support participants during running events by meeting their needs and enhancing their motivations for participation. The results obtained provide a solid foundation for further research on this topic.

## Abbreviations

MRE	Mass running events
PWPDP	People with physical disabilities
MOMS	Motivations of Marathoners Scale
SDT	Self-Determination Theory

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13102-024-00981-8>.

Supplementary Material 1

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## Author contributions

MR, JP and E M-M contributed to the data collection and project administration. MK, TT and JP prepared the original draft of the manuscript. MK and TT contributed to the analysis and interpretation of the data. All authors (MK, MR, JP, E M-M, TT) contributed to the study conception and design, data collection or data interpretation, and critical revision of the manuscript; approved the final manuscript; and agreed to be accountable for all aspects of the work. All authors have read and agreed to the published version of the manuscript.

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## Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

## Declarations

### Ethics approval and consent to participate

Participants were treated ethically by the guidelines in the American Psychological Association's code of ethics regarding anonymity and consent and in accordance with the generally accepted principles for the conduct of research contained in the Declaration of Helsinki. The study did not require formal approval from the Bioethics Committee because, according to the rules in Poland, the Bioethics Committee does not consider applications for standardized surveys used for their intended purpose when statistically selected survey items are analyzed in the study. Our online questionnaire clearly indicated in the headline that returning the completed survey was tantamount to expressing informed and voluntary consent to participate in the study.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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## References

1. Pocza J, Malchrowicz-Moško E. Modern running events in Sustainable Development—more than just taking care of Health and Physical Condition (Poznan Half Marathon Case Study). *Sustainability*. 2018;10:21–45.
2. Abbas A. The embodiment of class, gender and age through leisure: a realist analysis of long distance running. *Leisure Stud*. 2004;23:159–75.
3. O'Keefe JH, O'Keefe EL, Lavie CJ. The Goldilocks Zone for Exercise: not too little, not too much. *Mo Med*. 2018;115:98–105.
4. Malchrowicz-Moško E, Waśkiewicz Z. The impact of Family Life and Marital Status on the motivations of Ultramarathoners: the Karkonosze Winter Ultramarathon Case Study. *Int J Environ Res Public Health*. 2020;17.
5. Wicker P, Hallmann K, Prinz J, Weimar D. Who takes part in triathlon? An application of lifestyle segmentation to triathlon participants. *Int J Sport Manage Mark*. 2012;12.
6. Ogles BM, Masters KS. A typology of Marathon runners based on Cluster Analysis of motivations. *J Sport Behav*. 2003;26:69.
7. Zach S, Xia Y, Zeev A, Arnon M, Choresh N, Tenenbaum G. Motivation dimensions for running a marathon: a new model emerging from the motivation of Marathon Scale (MOMS). *J Sport Health Sci*. 2017;6:302–10.
8. Masters KS, Ogles BM, Jolton JA. The development of an instrument to measure motivation for marathon running: the motivations of marathoners scales (MOMS). *Res Q Exerc Sport*. 1993;64:134–43.
9. Nikolaidis PT, Chalabaev A, Rosemann T, Knechtle B. Motivation in the Athens Classic Marathon: the role of sex, Age, and performance level in Greek recreational Marathon runners. *Int J Environ Res Public Health*. 2019;16.
10. Waśkiewicz Z, Nikolaidis PT, Gerasimuk D, Borysiuk Z, Rosemann T, Knechtle B. What motivates successful Marathon runners? The role of sex, Age, Education, and training experience in Polish runners. *Front Psychol*. 2019;10:1671.
11. Knechtle B, Rüst CA, Rosemann T. The aspect of nationality in participation and performance in ultra-marathon running — a comparison between 'Badwater' and 'Spartathlon'. *OA Sports Med*. 2013;1:1.
12. Buning RJ, Walker M. Differentiating Mass Participant Sport Event consumers: traditional Versus non-traditional events. *Sport Mark Q*. 2016;25:47–58.
13. Malchrowicz-Moško E, Pocza J. Motivations for running in men: a comparative analysis of local runners and sports tourists. *Tour*. 2019;29:69–79.
14. Malchrowicz-Moško E, Gravelle F, Dąbrowska A, León-Guereño P. Do years of running experience influence the motivations of amateur Marathon athletes? *Int J Environ Res Public Health*. 2020;17:585.
15. Ryan R, Williams G, Patrick H, Deci E. Self-determination theory and physical activity: the dynamics of Motivation in Development and Wellness. *Hellenic J Psychol*. 2009;6:107–24.



16. Teixeira PJ, Carraça EV, Markland D, Silva MN, Ryan RM. Exercise, physical activity, and self-determination theory: a systematic review. *Int J Behav Nutr Phys Act.* 2012;9:1–30.
17. Fortier MS, Duda JL, Guerin E, Teixeira PJ. Promoting physical activity: development and testing of self-determination theory-based interventions. *Int J Behav Nutr Phys Act.* 2012;9:1–14.
18. Standage M, Ryan RM. Self-determination theory in Sport and Exercise. *Handbook of Sport psychology.* John Wiley & Sons, Ltd; 2020. pp. 37–56.
19. Martin JJ. *Handbook of disability sport and exercise psychology.* 2018.
20. Brasile FM, Hedrick BN. Participation Incentives between Adult and Youth Wheelchair Basketball players. *Palaestra.* 1991;7:40–6.
21. McLoughlin G, Weisman Fecske C, Castaneda Y, Gwin C, Graber K. Sport Participation for Elite athletes with physical disabilities: motivations, barriers, and facilitators. *Adapted Phys Activity Q.* 2017;34:421–41.
22. Perreault S, Vallerand RJ. A test of self-determination theory with wheelchair basketball players with and without disability. *Adapted Phys Activity Q.* 2007;24:305–16.
23. Popov S, Sokić J, Stupar D. Relations between motivation for long-distance running and emotional well-being. *Psihologija.* 2019;52.
24. Whitehead AE, Umeh K, Brockett C, Westerbeek H, Powling E, Davies KF, et al. Motivational differences between 5K, half marathon and full marathon participants in the UK and India. *Managing Sport Leisure.* 2022;27:337–50.
25. Boswell B, Ko B, Yoon S. Experiences and motivations of dancers with and without disabilities in inclusive dance. *Sport Educ Soc.* 2023;28:508–21.
26. Ryan R, Deci E. Self-determination theory and the facilitation of intrinsic motivation, Social Development, and well-being. *Am Psychol.* 2000;55:68–78.
27. Szyman R, Molik B. Participation incentives among US adult, US youth, and Polish adult wheelchair basketball players. *Am J Recreation Therapy.* 2012;11:17–25.
28. Furst DM, Ferr T, Megginson N. Motivation of disabled athletes to participate in triathlons. *Psychol Rep.* 1993;72:403–6.
29. Molik B, Zubala T, Słyk K, Bigas G, Gryglewicz A, Kucharczyk B. Motivation of the disabled to participate in chosen Paralympics events (wheelchair basketball, wheelchair rugby, and boccia). *Physiotherapy.* 2010;18:42–51.
30. Chen S, Wang J, Jin M, Lau Kwok O. Motivation of Sport Participation in Elite athletes with physical disabilities in Mainland China. *Asian J Exerc Sports Sci.* 2007;4:63–7.
31. Kämpfe A, Höner O, Willimczik K. Multiplicity and development of achievement motivation: a comparative study between German elite athletes with and without a disability. *Eur J Adapted Phys Activity.* 2014;7:32–48.
32. Fung L. Participation motives in competitive sports: a cross-cultural comparison. *Adapted Phys Activity Q.* 1992;9:114–22.
33. Brasile FM. Psychological factors that influence participation in wheelchair basketball. *Palaestra.* 1988;2:25–7.
34. Prokopowicz G, Molik B, Prokopowicz K, Chamera T, Ogonowska-Słodownik A, Lencse Mucha J, et al. Motives for participation in paralympic sailing – opinions of Polish and foreign athletes with physical disabilities. *Adv Rehabilitation.* 2016;30:17–26.
35. Bauerfeind J, Koper M, Wiczorek J, Urbański P, Tasiemski T. Sports injuries in Wheelchair Rugby – A Pilot Study. *J Hum Kinetics.* 2015;48.
36. Koper M, Nadolska A, Urbański P, Włski M. Relationship between Pre-competition Mental State and Sport result of disabled Boccia athletes. *Int J Environ Res Public Health.* 2020;17:8232.
37. Urbański P, Connors R, Tasiemski T. Leisure time physical activity in persons with spinal cord injury across the seasons. *Neurol Res.* 2020;1–7.
38. Kasińska Z, Urbański PK, Tasiemski T. Sports injuries among players of the Polish National Team in Amputee Football in the Annual Training cycle. *J Hum Kinet.* 2022;81:211–9.
39. Urbański P, Rogoza R, Brewer B, Tasiemski T. Coping with the COVID-19 pandemic by paralympic athletes preparing for elite sport events: a longitudinal study. *Scand J Med Sci Sports.* 2023;33:512–20.
40. Jacobsson LJ, Westerberg M, Malec JF, Lexell J. Sense of coherence and disability and the relationship with life satisfaction 6–15 years after traumatic brain injury in northern Sweden. *Neuropsychological Rehabilitation.* 2011;21:383–400.
41. Bioethics Committee at the Poznan University of Medical Sciences. *Eksperymenty medyczne / badania naukowe niesponsorowane.* [https://bioetyka.ump.edu.pl/EKSPERYMENTY\\_MEDYCZNE\\_BADANIA\\_NAUKOWE\\_NIESPONSOROWANE.html](https://bioetyka.ump.edu.pl/EKSPERYMENTY_MEDYCZNE_BADANIA_NAUKOWE_NIESPONSOROWANE.html). Accessed 7 Jun 2024.
42. Dybala M. The Polish adaptation of the motives of runners for running Questionnaire. *Rozprawy Naukowe.* 2013;40:118–28.
43. Erikson EH. *Identity, Youth and Crisis.* New York: W. W. Norton Company; 1968.
44. Cohen J. *Statistical Power Analysis for the Behavioral Sciences.* 2nd edition. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.
45. Jaarsma EA, Geertzen JHB, Jong R, Dijkstra PU, Dekker R. Barriers and facilitators of sports in Dutch paralympic athletes: an explorative study. *Scand J Med Sci Sports.* 2014;24:830–6.
46. Zhou J, Yuan F, Yu T, Liu F. Why are the disabled people willing to Participate in sports: taking Chinese disabled table tennis players as the object of investigation? *Adv Phys Educ.* 2016;6:88–98.
47. León-Guereño P, Tapia-Serrano MA, Castañeda-Babarro A, Malchrowicz-Moško E. Do sex, Age, and Marital Status Influence the motivations of amateur Marathon runners? The Poznan Marathon Case Study. *Front Psychol.* 2020;11:2151.
48. Ogles BM, Masters KS, Richardson SA. Obligatory running and gender: an analysis of participative motives and training habits. / caractere imperatif de la course et sexe: une analyse des motifs de participation et des habitudes d'entraînement. *Int J Sport Psychol.* 1995;26:233–48.
49. Manzano-Sánchez D, Postigo-Pérez L, Gómez-López M, Valero-Valenzuela A. Study of the motivation of Spanish amateur runners based on training patterns and gender. *Int J Environ Res Public Health.* 2020;17:8185.
50. Lins S, Melo CF, Alves SG, Silva RL. Our voices, our meaning: the Social representations of sports for Brazilian athletes with disabilities. *Adapted Phys Activity Q.* 2019;36:42–60.
51. Ogles B, Masters K. Older vs. younger adult male marathon runners: participative motives and training habits. *J Sport Behav.* 2000;23:130–43.
52. Jaarsma E, Dijkstra P, Geertzen J, Dekker R. Barriers to and facilitators of sports participation for people with physical disabilities: a systematic review. *Scand J Med Sci Sports.* 2014;24.
53. Kenttä G, Corban R. Psychology within the paralympic context - same, same or any different? *Olympic Coach.* 2014;25:15–25.
54. Kolotouchkina O, Llorente-Barroso C, García-Guardia ML, Pavón J. Disability, Sport, and television: media visibility and representation of Paralympic games in News Programs. *Sustainability.* 2021;13:256.
55. Pappous A (Sakis), Marcellini A, de Léséleuc E, editors. *From Sydney to Beijing: the evolution of the photographic coverage of Paralympic Games in five European countries.* Sport in Society. 2011;14:345–54.
56. Van de Vliet P. Paralympic athlete's health. *Br J Sports Med.* 2012;46:458.
57. Gaskin CJ, Andersen MB, Morris T. Sport and physical activity in the life of a man with cerebral palsy: compensation for disability with psychosocial benefits and costs. *Psychol Sport Exerc.* 2010;11:197–205.

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