

Satisfaction with life in Special Olympic athletes: the role of autonomy support and basic need fulfilment

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Aims: Athletes in the general population report higher satisfaction of basic needs when coaches are providing an autonomy supportive sport climate (ASSC). Our study aims at investigating whether ASSC is associated with satisfaction with life in athletes with intellectual disabilities (ID) and whether this association is mediated by basic need satisfaction.

Method: During the Special Olympics World Winter Games 2017, 168 athletes with ID ($M = 33.86$ years; $SD = 10.47$) completed questionnaires measuring ASSC, basic need satisfaction (autonomy, competence, and relatedness), and satisfaction with life. Multiple linear regression analyses and mediation analyses were performed. The mediation model was controlled for the potential impact of participating in team vs. individual sports. Additionally, gender effects were explored.

Results: ASSC was significantly associated with satisfaction with life ($\beta = .38$, $p < .001$). This association was mediated by competence (indirect effect: $ab_1 = .15$; CI [.05; .32]) but not by autonomy or relatedness. No effects were found related to participating in team vs. individual sports or gender.

Conclusions: Our study provides evidence that an ASSC is associated with athletes perceiving themselves as more competent and reporting more satisfaction with life.

Abbreviations: SDT: self-determination theory; BNT: basic needs theory; ASSC: autonomy supportive sport climate

Keywords: intellectual disabilities; developmental disabilities; intellectual developmental disorder; basic psychological needs; autonomy support; satisfaction with life; sport; Special Olympics

Introduction

Intellectual disabilities (ID) comprise etiologically diverse conditions characterised by intellectual functioning and adaptive behaviour that are significantly below average (ICD-11; World Health Organization 2019). The prevalence for ID is estimated at about one percent of the world's population (Maulik *et al.* 2011).

There is strong evidence for people with ID experiencing physiological and psychological health benefits when engaging in sports programmes (Blauwet and Willick 2012, Brooker *et al.* 2015, Son *et al.* 2016). Sports and exercise have extensive positive effects on indicators of physical health and fitness, like body

weight, body composition, waist circumference, muscle strength, and cardiorespiratory fitness in people with ID (Kim 2017, Oviedo *et al.* 2014, Son *et al.* 2016, Wu *et al.* 2017). Furthermore, physical exercise can improve mental health (Brooker *et al.* 2015, Özer *et al.* 2012, Spruit *et al.* 2016), with exercise leading to reduced depressive symptoms (Carraro and Gobbi 2014) or decreases in challenging behaviour (Ogg-Groenendaal *et al.* 2014), for example.

In team sports, psychosocial benefits are even surpassing the physical health benefits (Moltó and Ovejero Bruna 2017, White *et al.* 2017). When asked about participation in team sports, athletes with ID indicated enhanced feelings of belonging and togetherness, as well as feelings of striving (Hudson *et al.* 2018, White

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et al. 2017). The latter encompasses indicators of social, emotional, and personal growth through participation in sports (White et al. 2017). Moreover, athletes with ID participating in team sports described joint achievement as important for their sense of competence, and development of a sporting identity (Hudson et al. 2018).

The importance of sports and its link to a high quality of life is even reflected by the UN-Convention on the Rights of Persons with Disabilities, Article 30 (United Nations 2006), stating that States Parties need to take appropriate measures to allow people with ID the participation on an equal basis with others in sporting activities.

Although the benefits of participation in sports on the quality of life for persons with ID have been widely studied, there is hardly any research applying and testing a theoretically based model to examine the motivational background determining these positive outcomes. The study by Farrell et al. (2004) using self-determination theory (SDT; Ryan and Deci 2000, Ryan and Deci 2017) as a theoretical framework to investigate motivation in athletes with ID is an early contribution in this context. The authors reported on the relevance of the SDT for intrinsic motivation in athletes with ID, by analysing 38 interviews in a qualitative approach.

The present study is designed to originally test the applicability and usefulness of the SDT and specifically the basic needs theory (BNT; Ryan and Deci 2000, Ryan and Deci 2017), for athletes with ID using a quantitative approach.

In the BNT, as part of the SDT, three basic psychological needs are defined, namely: autonomy, competence, and relatedness (Ryan and Deci 2000, Ryan and Deci 2017). It is assumed that these psychological needs are universal to all human beings throughout the lifespan, and that they should be satisfied in order to promote personal well-being, vitality, and mental health (Blauwet and Willick 2012, Deci 2004, Ryan and Deci 2000, Ryan and Deci 2017).

In the general population, the SDT and the BNT have been successfully tested in various contexts. In the context of physical activity, there is strong evidence for the advantageousness of basic need fulfilment in athletes for their well-being (Adie et al. 2008, 2012, Behzadnia et al. 2018, Garn et al. 2012, González et al. 2017, López-Walle et al. 2012, Reinboth and Duda 2006).

This effect was linked to the perception of the sport climate. Athletes from different cultural backgrounds reported higher basic need satisfaction and higher physical and psychological well-being, if they perceived their coach as autonomy supportive (Adie et al. 2008, 2012, Behzadnia et al. 2018, Garn et al. 2012, González et al. 2017, López-Walle et al. 2012, Reinboth and Duda 2006). Autonomy support in this

matter is described as promoting choice and encouraging decision-making of athletes, involving them in decisions, as well as minimizing controlling behaviours. Providing autonomy support plays a crucial role in enhancing an individual's self-determination, which consequently fosters other positive outcomes in various areas of life (Deci and Ryan 2008).

The BNT has been examined in persons with ID in the setting of work, education, and living accommodations (Akkerman et al. 2018, Deci 2004, Wehmeyer and Bolding 1999). It has been shown that fulfilment of the needs for autonomy, competence, and relatedness is equally important for the well-being of people with ID in these settings. Higher levels of basic need fulfilment predict better educational outcomes (Deci 2004) as well as working and living in more inclusive environments (Akkerman et al. 2018, Wehmeyer and Bolding 1999). In sport settings, no quantitative study has examined either basic need fulfilment of people with ID, or generally tested a theoretically based model.

In this study, we hypothesise that an autonomy supportive sport climate (ASSC) is associated with higher satisfaction with life in athletes with ID. We further hypothesise that this relationship is mediated by basic need satisfaction in sports, namely autonomy, competence, and relatedness. As participation in team sports has been described as particularly relevant to psychosocial wellbeing, we additionally control our model for participating in team versus individual sports. Moreover, we explore potential gender differences.

Materials and methods

Participants

To take part in the current study, participants had to (a) actively participate in the Special Olympics World Winter Games 2017, (b) be German-speaking, and (c) be above 18 years of age. To be eligible to participate in Special Olympics, athletes must be identified by an agency or professional as having at least one of the following conditions: (a) an intellectual disability, (b) a cognitive delay, or (c) a closely related developmental disability (Special Olympics 2017). Participation was voluntary and there were no financial incentives.

Overall, 181 athletes participated in the present study. After exclusion of incomplete interviews, a sample of $N = 168$ remained for data analyses. The athletes' age ranged from 18 to 63 years ($M = 33.86$; $SD = 10.47$) and 26% were female. Fifty-eight percent of athletes competed in individual sports (e.g. speed skating, alpine skiing, snowshoeing) and 42% in team sports (e.g. floorball, floor hockey, stick shooting). On average, participants exercised for 3.85 h a week ($SD = 2.74$). The majority (65%) had also participated in Special Olympic Games prior to 2017.

Table 1. Subscales of the questionnaires used in the study along with examples of items.

Subscale	Examples of items
Perceived Autonomy Support	My coach encourages me.
Perceived Competence	I think I am pretty good at my sport activity.
Perceived Autonomy	I can exercise in my own way.
Perceived Relatedness	I like to exercise with my training companions.
Satisfaction with Life	I am satisfied with my life.

Procedure

The participants for this cross-sectional study were recruited during the period of the 11th Special Olympics World Winter Games, which were staged in Austria (Graz, Schladming-Rohrmoos, and Ramsau), from March 14th until March 25th, 2017. With the support of Special Olympics Austria, national coaches were informed about the study prior to the games. Recruiting via national coaches took place predominantly during breaks (i.e. before, after, and in-between the games).

Questionnaires were administered through structured interviews (as defined by Bortz and Döring 2006) in quiet surroundings. In sum, ten interviewers, who were either psychology or sociology students, conducted the interviews. Interview guidelines were developed in cooperation with experts in the field of ID. All interviewers were trained in using the interview guidelines and in specific interviewing techniques for people with ID, such as using clear and concise language, speaking slowly, and rephrasing questions if necessary. The guidelines as well as the questionnaires were piloted on five former Special Olympics participants in a supported living facility in Lower Austria.

All structured interviews were carried out face-to-face. First, the purpose of the study and the informed consent form was explained to participants. Once the participants had provided consent, the questions were read out loud by the interviewers. To ensure that the wording was understood, some questions had to be asked repeatedly. The answers were recorded by the interviewer using an online questionnaire accessed via smartphone or laptop. Interviews lasted $M = 20.54$ min on average ($SD = 6.79$).

Apart from data related directly to testing the hypotheses, socio-demographic data including sex, age, living and working environment etc., were collected in course of the interviews. Furthermore, participants were asked about their sport and previous experiences in major competitive sporting events. To determine whether athletes were competing in team or individual sports, both self-reports (structured interviews) and other-reports (i.e. information from trainers who helped organise the interviews) were used. Interviews were conducted in/near the different sporting arenas which were separated depending on the type of sport (e.g. ice rink, floorball field, snowshoeing arena, ski slope etc.), making it easy to distinguish between team and individual sports. No discrepancies between participants'

reports and objective measures regarding this variable were identified.

Measures

All scales were modified to be suitable for interviewing people with ID. All items were translated from English to German language with the back-translation and parallel blind method (Behling and Law 2005, Cha *et al.* 2007). German language items were adapted to be compliant with easy-to-read guidelines (Inclusion Europe aisbl 2017). After careful consideration of item contents, scales were shortened to four items each, in order to decrease participant load and avoid redundancy. Answers could be given on a 5-point Likert and Kunin scale that were presented to the participant. Depending on the athletes' preferences and articulation abilities, either the Likert or the Kunin scale was predominantly used. The anchors ranged from 1 (*completely true*) to 5 (*not true at all*). Examples of items are reported in Table 1.

The questionnaires were chosen according to the ones most commonly used in the examination of the BNT in athletes without disabilities in order to ensure high comparability.

Autonomy supportive sport climate (ASSC)

Athletes' perception of coaches' autonomy support was assessed with a modified version of the Sport Climate Questionnaire (Deci and Ryan n.d.; <http://selfdeterminationtheory.org/pas-sport-climate/>). Due to low internal consistency, one item was removed from the scale before the statistical analysis, leading to Cronbach's Alpha of .64.

Basic need satisfaction in sports

To collect self-reports of autonomy, the Perceived Autonomy subscale of the Psychological Need Satisfaction in Exercise Scale (Wilson *et al.* 2006) was adapted. Competence was measured by the modified Competence subscale of the Intrinsic Motivation Inventory (McAuley *et al.* 1989). Measurement of relatedness in sports was based on the Perceived Relatedness subscale of the Psychological Need Satisfaction in Exercise Scale (Wilson *et al.* 2006). Cronbach's Alpha for all adapted scales ranged between .60 and .72.

Table 2. Descriptive analysis of the basic needs models' variables and t-tests for gender.

	total sample		males		females		<i>T</i>	<i>df</i>	<i>p</i>
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>			
ASSC	159	4.73 (0.45)	117	4.71 (0.42)	42	4.79 (0.52)	.84	157	.40
Autonomy	134	3.28 (1.11)	101	3.29 (1.21)	33	3.23 (1.18)	-.27	132	.79
Competence	154	4.44 (0.56)	112	4.44 (0.57)	42	4.45 (0.56)	.17	152	.87
Relatedness	159	4.63 (0.49)	116	4.62 (0.47)	43	4.65 (0.54)	.26	157	.80
Satisfaction with Life	147	4.53 (0.53)	106	4.51 (0.53)	41	4.57 (0.55)	.62	145	.53

Note. ASSC: Autonomy Supportive Sport Climate.

Satisfaction with life

Global life satisfaction was measured using a modified version of the Satisfaction with Life Scale (Diener *et al.* 1985). Cronbach's Alpha of the adapted scale was .64.

Statistical analyses

We analysed all data using IBM SPSS Statistics (version 22; IBM Corp 2013). For each scale mean-scores were computed for complete cases, followed by the transformation of means to z-scores to obtain standardised estimates. Model 4 of SPSS Macro PROCESS 2.16.3 (Hayes 2013a) was used to conduct mediation analyses. Statistical significance of indirect effects was tested using bootstrapping procedures. Standardised indirect effects were estimated for each of 20,000 bootstrapped samples, and the 95% confidence interval was computed (Hayes 2013b). We controlled our mediation model for the potential impact of competing in team vs. individual sports. Gender was not included in the mediation model due to two reasons: First, the highly unequal sample sizes between the two groups would have affected the robustness of the model. Second, no gender differences were observed via the explorative univariate analysis using descriptive statistics and independent-samples t-tests.

Ethical considerations

Prior to data collection, ethical approval for this study, including the content of the informed consent and the questionnaires, was obtained from the Ethics Committee of the University of Vienna (reference number: 00248; date of approval: 26.01.2017). Before starting the interviews, all interviewees were informed about the voluntary and anonymous nature of participation. Informed consent, written in easy-to-read German language, was signed by all participants. In addition, information letters for legal guardians, containing all the details about the study, were handed out to participating athletes. The letter also contained information about the legal guardians' right of revocation. This approach was approved by the Ethics Committee of the University of Vienna as abiding to the legal requirements in Austria.

Results

Table 2 displays descriptive analysis of the variables included in the mediation model as well as the comparison of all variables' means between women and men. There are no evident differences in the response patterns of female and male athletes. The correlations between the three basic needs, ASSC, and satisfaction with life are shown in Table 3.

Linear regression predicting satisfaction with life from ASSC was significant ($F(1,141) = 23.14$, $R^2 = .14$, $p < .001$), and ASSC was significantly associated with satisfaction with life ($\beta = .38$, $p < .001$).

The relationship between ASSC and satisfaction with life was mediated by competence. As Figure 1 illustrates, the standardised regression coefficient between ASSC and competence was statistically significant ($\beta = .49$, $p < .001$), as was the standardised regression coefficient between competence and satisfaction with life ($\beta = .34$, $p < .001$). The bootstrapped standardised indirect effect was $ab_1 = .15$, and the 95% confidence interval ranged from .05 to .32. Thus, the indirect effect was statistically significant.

The relationship between ASSC and satisfaction with life was not mediated by relatedness. As Figure 1 shows, the standardised regression coefficient between ASSC and relatedness was statistically significant ($\beta = .32$, $p = .001$), but the standardised regression coefficient between relatedness and satisfaction with life was not ($\beta = .10$, $p = .22$).

The relationship between ASSC and satisfaction with life was not mediated by autonomy. As illustrated in Figure 1, the standardised regression coefficient between ASSC and autonomy was not statistically significant ($\beta = .08$, $p = .37$), neither was the standardised regression coefficient between autonomy and satisfaction with life ($\beta = .16$, $p = .06$). After adding the hypothesised mediators to the model, the direct effect of ASSC on satisfaction with life did not remain significant (see Table 4), indicating a full mediation by competence.

When controlling the model for participating in team vs. individual sports during the period of the World Winter Games 2017, all significant paths of the original model remained significant. The indirect mediation effect of competence on the association between ASSC and satisfaction with life was significant when

Table 3. Correlation matrix.

	ASSC	Autonomy	Competence	Relatedness	Satisfaction with Life
ASSC	1	$\rho = .370$	$\rho < .001$	$\rho < .001$	$\rho < .001$
Autonomy	.08 ($n = 132$)	1	$\rho = .003$	$\rho = .064$	$\rho = .008$
Competence	.41** ($n = 149$)	.26 ** ($n = 126$)	1	$\rho = .001$	$\rho < .001$
Relatedness	.30** ($n = 153$)	.16 ($n = 132$)	.28** ($n = 148$)	1	$\rho = .001$
Satisfaction with Life	.38** ($n = 143$)	.23** ($n = 128$)	.45** ($n = 138$)	.27** ($n = 144$)	1

Note. ASSC: Autonomy Supportive Sport Climate. ** significant at $p < .01$.

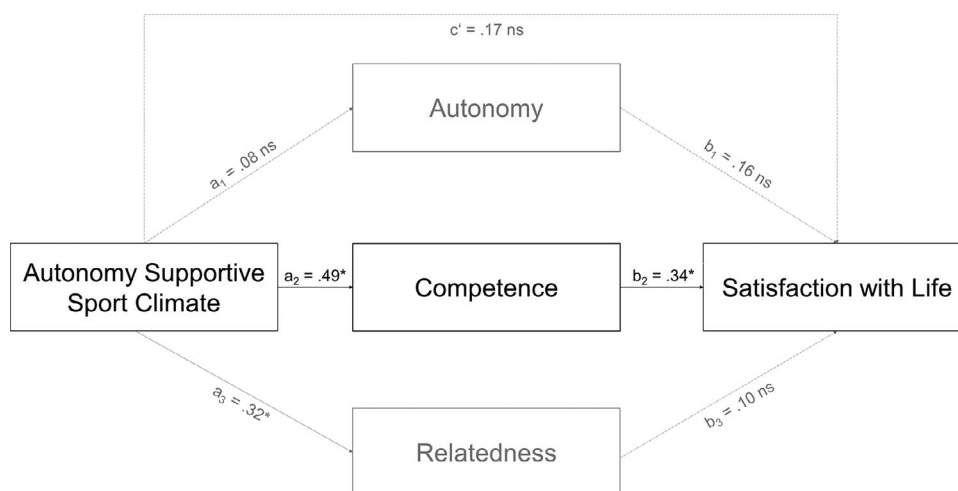


Figure 1. Mediation model. Black paths indicate complete mediation. *indicates significance levels of $p < .05$.

Table 4. Parameters of the mediation model.

Antecedent	Consequent															
	M ₁ (Autonomy)			M ₂ (Competence)			M ₃ (Relatedness)			Y (Satisfaction with Life)						
	Coeff.	SE	ρ	Coeff.	SE	ρ	Coeff.	SE	ρ	Coeff.	SE	ρ				
X (ASSC)	a_1	.08	.09	.371	a_2	.49	.08	< .001	a_3	.32	.09	.001	c'	.17	.10	.08
M ₁ (Autonomy)	-	-	-	-	-	-	-	-	-	-	-	-	b_1	.16	.09	.06
M ₂ (Competence)	-	-	-	-	-	-	-	-	-	-	-	-	b_2	.34	.10	< .001
M ₃ (Relatedness)	-	-	-	-	-	-	-	-	-	-	-	-	b_3	.10	.08	.22
Constant	i_{M1}	.02	.09	.82	i_{M2}	-.00	.08	.97	i_{M3}	-.02	.09	.82	i_Y	-.02	.09	.82
		$R^2 = .01$				$R^2 = .23$				$R^2 = .09$				$R^2 = .29$		
		$F(1, 116) = 0.81$				$F(1, 116) = 35.17$				$F(1, 116) = 11.44$				$F(4, 113) = 11.33$		

Note. ASSC: Autonomy Supportive Sport Climate.

controlling for team sports vs. individual sports ($ab_2 = .18$; CI [.06; .35]). Further details on paths in the mediation model including the covariate can be found in Table 5.

Discussion

The present results show that Special Olympics athletes in a more ASSC report higher satisfaction with life on average. This finding suggests that autonomy support is not only relevant for athletes in the general population (Adie et al. 2008, 2012, Behzadnia et al. 2018, Garn et al. 2012, González et al. 2017, López-Walle et al. 2012, Reinboth and Duda 2006) but also serves an important function in the training environment of athletes with ID. In our study, perceived competence emerged as a significant full mediator of the

relationship between ASSC and satisfaction with life, whereas perceived autonomy and relatedness did not. The participation in team or individual sports had no impact on the statistical significance of our model.

Further, not all of the associations predicted by the BNT (Ryan and Deci 2000, Ryan and Deci 2017) could be confirmed in the current study. In the context of competitive sports and ID the need for competence explained most of the variance.

The importance of experiencing competence and sporting achievement for the well-being of athletes with ID has previously been described in qualitative studies (Hudson et al. 2018, Weiss et al. 2017). Whereas these studies emphasised the temporarily enhanced experience of positive emotions associated with perceived competence, our study revealed that improving athletes'

Table 5. Mediation Model with team vs. Individual sports as covariate.

Antecedent	Consequent															
	M ₁ (Autonomy)			M ₂ (Competence)			M ₃ (Relatedness)			Y (Satisfaction with Life)						
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p				
X (ASSC)	a_1	.09	.10	.355	a_2	.53	.08	< .001	a_3	.31	.10	.002	c'	.15	.10	.144
M ₁ (Autonomy)	–	–	–	–	–	–	–	–	–	–	–	–	b_1	.15	.09	.082
M ₂ (Competence)	–	–	–	–	–	–	–	–	–	–	–	–	b_2	.37	.10	<.001
M ₃ (Relatedness)	–	–	–	–	–	–	–	–	–	–	–	–	b_3	.10	.09	.237
C (Team vs. Individual)	–.06	.19	.745	–.32	.15	.051	.23	.19	.226	.18	.18	.317				
Constant	i_{M1}	.05	.12	.700	i_{M2}	.15	.11	.161	i_{M3}	–.11	.12	.373	i_Y	–.15	.11	.175
	$R^2 = .01$			$R^2 = .27$			$R^2 = .10$			$R^2 = .30$						
	$F(2, 113) = 0.454$			$F(2, 113) = 21.119$			$F(2, 113) = 6.623$			$F(5, 110) = 9.393$						

Note. ASSC: Autonomy Supportive Sport Climate.

perceived competence also impacted athletes' overall satisfaction with life.

Furthermore, the present results are in line with those found in other marginalised groups. When exploring relations between basic need satisfaction and perceived health of homeless people, higher levels of competence were significant predictors of perceived health, whereas autonomy and relatedness were not (Van Der Laan *et al.* 2018). Thus, perceived competence might be of higher relevance than autonomy and relatedness when it comes to predicting health or overall satisfaction with life, with satisfaction with life typically comprising the topic of health (Cummins 1996).

The reason for the non-significant relationships between autonomy support and basic needs may be found in the way basic needs are perceived and fostered by support staff of people with ID. Recent findings suggest that support staff in residential facilities for people with ID show higher levels of support regarding competence as compared to autonomy and relatedness (Embregts *et al.* 2019). It thus seems that support of clients' competence is perceived as more important for staff working with persons with ID than fostering clients' autonomy or relatedness (Embregts *et al.* 2019). This could conceivably affect how clients perceive their competence. Hence, it is plausible to assume that similar processes might have contributed to the findings of our study. If coaches are focusing more on their athletes' competence than on their autonomy or relatedness, higher perceived competence of the athletes will most likely result. Special emphasis on competence, on the part of coaches and athletes, is easily comprehensible in the context of a major sporting competition, such as the Special Olympic World Winter Games 2017. Only athletes who qualified at National Games fulfilled the requirements to take part in the World Games (Special Olympics Austria 2019). This implies that all participants had previously experienced athletic achievements and medal ceremonies that might have enhanced their perceived competence in a sports context.

Even though all three basic needs emerged as significant mediators in sports settings in the general population (Adie *et al.* 2008, 2012, Behzadnia *et al.* 2018, Garn *et al.* 2012, González *et al.* 2017, López-Walle *et al.* 2012, Reinboth and Duda 2006), some studies have found gender specific effects for competence (Adie *et al.* 2008, Reinboth *et al.* 2004). For male but not for female athletes, autonomy support was significantly associated with competence (Adie *et al.* 2008). Furthermore, in an all-male sample competence emerged as the strongest predictor of psychological well-being (Reinboth *et al.* 2004). These findings indicate that even though Ryan and Deci (2000) postulated the invariance of the basic needs model, there might be gender specific effects in sports settings. In the present study, male athletes were represented predominantly at a ratio of about 3 to 1. However, explorative analyses revealed no gender differences. It could be assumed that the differences between male and female athletes concerning their feelings of autonomy, competence, and relatedness might disappear in the context of high performance sports, regardless of ongoing competitions. Alternatively, the impact of currently participating in a major tournament, like the Special Olympic World Games, and experiencing the joyful atmosphere, the medal ceremonies etc. fosters perceived competence in a way that might balance potential gender differences.

Finally, a distinct conceptualisation of autonomy for athletes with ID might have contributed to our results. It is possible that voluntarily following the coaches' schedules, training plans and goals is considered as being autonomous by athletes with ID. Hence, reports of high perceived autonomy in sports might have resulted, even though objectively the athletes' autonomy was low. This might have contributed to the lack of associations with autonomy support and satisfaction with life. However, this kind of autonomous decision making was not part of the conceptualisation of autonomy and the questionnaires used in this study. Our interpretations regarding the conceptualisation of autonomy on the part of athletes with ID are therefore of

speculative nature. More research is needed to further explore this hypothesis.

Limitations

In terms of limitations, firstly, it is important to consider that the presented results are based on cross-sectional data collection. Even though the basic needs model implies stable patterns of relationships over the course of time (Deci 2004, Deci and Ryan 2008, Ryan and Deci 2000, Ryan and Deci 2017), no conclusions regarding chronology or cause and effect can be drawn from our data.

Secondly, the questionnaires measuring ASSC, basic needs, and satisfaction with life were newly translated and adapted for this study. These steps were necessary to decrease participant load and conduct the research in the first place, even if they might have contributed to lower internal consistencies of the scales. This was expected, as internal consistency tends to be lower the less items are included.

Thirdly, the potential impact of participating in a major competition like the Special Olympics World Games, the largest sporting event for people with ID (Special Olympics 2017 GmbH 2017), needs to be kept in mind when interpreting our results. Together with the fact that athletes with ID report higher satisfaction with life than non-athletes with ID (Moltó and Ovejero Bruna 2017), this could account for some of the ceiling effects in our data (e.g. very high means in competence, relatedness, and satisfaction with life). Low variability within those variables could have further distorted our findings. To draw inferences from our model, our study needs to be replicated in a more diverse sample of athletes beyond the context of the Special Olympics.

Future directions

Future research would benefit from examining longitudinal associations within the framework of the basic needs model. This would help with determining cause and effect, but also testing the longevity of the effect that basic need fulfilment in athletes has on their satisfaction with life. Additionally, examining the said model is recommended (a) in athletes with ID who are not taking part in sports competitions, and (b) in people with ID who are not engaged in any formal physical activity, to control for the impact of major sporting competitions and regular formal physical activity. The examination of potential gender differences regarding basic need satisfaction of athletes with ID should be emphasised in future research as well. To provide a more comprehensive picture of basic need fulfilment in athletes with ID, interviewing techniques and questionnaires for people with limited verbal skills should be further developed for the use in quantitative studies. Deeper insights could also be gained by interviewing

athletes, caregivers and coaches, thus yielding triangulated findings on the role of an ASSC.

Moreover, the assessment of ID level and inclusion of additional variables, such as basic need thwarting (the frustration or dissatisfaction of basic needs; see Ryan and Deci 2000) and negative indices of well-being, would provide further insights regarding the applicability of the basic needs model for athletes with ID. The use of the Basic Psychological Need Satisfaction and Frustration Scale – Intellectual Disability (Chen *et al.* 2015, Frielink *et al.* 2019) would be advisable in this context. The examination of motivational styles within this framework should also be taken into account (Frielink *et al.* 2018) as there are studies suggesting differences in motivational styles between athletes with and without ID (e.g. Hutzler *et al.* 2013).

Conclusions

Improved satisfaction with life of athletes with ID can be observed during a major sporting competition when providing an ASSC during the event. This relationship is fully mediated by athletes' perceived competence.

From a practical point of view, our results suggest that coaches' provision of autonomy support predicts perceived competence in athletes with ID during sports competitions. This in turn impacts athletes' reported satisfaction with life. Providing an ASSC includes letting athletes set their own goals, involving them in decision making, and providing positive feedback regarding their athletic performance. According to the results of this study, the latter seems to be the most relevant, since in our study the athletes' perceived competence had the highest impact on their overall satisfaction with life. In the course of preparations for sporting competitions focusing on providing an autonomy supportive environment seems to be equally important for all high performing athletes, regardless of their gender or their participation in team or individual sports.

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No potential conflict of interest was reported by the authors.

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