

Physical activity and sport as a protective factor against health-threatening experiments with adulthood

Authors' Contribution:

A Study Design
B Data Collection
C Statistical Analysis
D Data Interpretation
E Manuscript Preparation
F Literature Search
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abstract

- Background** The aim of this paper is to specify to what extent goal orientation in physical activity and sports constitutes a protective factor against involvement in risky behaviors.
- Material/Methods** The research group consisted of 430 eighteen-year-old high school students (females n = 203; males n = 227; athletes n = 137; physically active n = 198; inactive group n = 95). Subjects were asked to complete a „pen-and-paper” task of filling-in the IPAQ Lipowski & Zaleski (2015) and a questionnaire concerning involvement in risky behaviors.
- Results** Male athletes high scores in persistence in action dimension were reflected by a lower likelihood of cigarette smoking and illicit drug use. The importance of heterogeneity of objectives turned out to be a buffering dimension protecting female athletes against alcohol drinking.
- Conclusions** Physical activity and practicing competitive sports may constitute a protective factor, especially among young women. Further exploration of issues concerning adolescents' purposeful actions may enrich our knowledge about the prevention of risky behaviors.
- Key words** sport psychology, risky behavior, physical activity, goal-oriented behavior

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INTRODUCTION

EMERGING ADULthood AND RISK TAKING

Late adolescence is a particularly interesting developmental period because of the associated social and psychological changes. Arnett proposed distinguishing a separate developmental period between 18–25 years of age, referring to it as “emerging adulthood” [1]. This is when a person makes independent decisions and takes actions without the supervision of other persons, the aim of which is to gain skills crucial to adult life [2]. The ability to analyze oneself with the future in mind (i.e. the ability to foresee and anticipate events as being outcomes of one’s activities) starts to increase from adolescence [3]. Furthermore, people with a better-developed sense of time will more likely foresee the consequences of their actions and have well-developed formal operational structures. In contrast, the analysis of decision-making processes and the setting of age-appropriate goals can highlight the inner self-regulatory processes, which can be helpful in distinguishing between adaptive and non-adaptive mechanisms of reaching adulthood [4]. Spending leisure time with persons of similar interests and goals can be an alternative to antisocial behaviors, as positive values and views presented by peers have a significant impact on an individual’s attitude [5]. Importantly, the capability of the prefrontal cortex to control impulses increases with age, and so too do cognitive capacities concerning rational decisions [6]. However, the prefrontal cortex is insufficiently developed during the period in question; as a result, the naturally higher need for seeking sensations increases the likelihood of involvement in health-threatening behaviors [6]. Experimenting with new roles is often associated with undertaking risky behaviors (e.g. using psychoactive substances, risky sexual behaviors), which may threaten a young person’s life or health, or have ramifications for their future through the occurrence of an addiction, unwanted pregnancy, sexually transmitted diseases, violence, mental illness, etc. [7, 8, 9]. The analysis of the phenomenon of involvement in risky behaviors should take into account gender differences [10]. Boys exhibit a stronger tendency towards three categories of risk: thrill-seeking, reckless behaviors, and anti-social behaviors [11]. The male sex is also associated with risky behaviors such as: fights, drinking alcohol, smoking marijuana and risky sexual behaviors [12, 13, 14, 15, 16].

THE PROTECTIVE ROLE OF PHYSICAL ACTIVITY AND EXPERIMENTS WITH ADULTHOOD AMONG ATHLETES

In accordance with the model suggesting the possibility of changing behaviors associated with regulating the need for stimulation from asocial to socially acceptable [17], directing an adolescent’s energy towards sport can satisfy his or her need for success and intense sensations. Involvement in organized and regular physical activity develops initiative, emotional regulation, the ability to establish goals, and time-management in young people, as well as problem solving and perseverance [18]. Consequently, undertaking physical activity and involvement in sport may be a moderating variable, protecting against the risk associated with social exclusion. Promoting physical activity is important not only in the context of improving a youth’s health, as sport is associated with pro-health behaviors, such as proper nutrition habits, positive psychological attitudes and health practices [19], but also in the context of prevention of risky behavior. Individuals undertaking physical activity or practicing sport have higher levels of traits which are considered to be personal resources,

such as resiliency [14, 20] and optimism [21]. Such predispositions are also factors protecting them against involvement in risky behaviors [22, 23].

Despite the possible benefits of participation in sport, involvement in regular sport activities does not protect from some risky behaviors, such as psychoactive substance abuse, unprotected sex, and the non medical use of prescription pain relievers [24, 25]. Research has shown that sportspersons abuse alcohol as frequently as their non-active peers [26]. The only difference is in the circumstances of excessive drinking – male athletes seldom drink at clubs or at home, the greatest risk concerns those living in the halls of residence. Male college-athletes are also more often involved in risky sexual behaviors than their non-active peers or female athletes are [27]. Studies on secondary level students also show an increased risk of alcohol use among boys who do sports [28]. However, young sportsmen are less likely to smoke nicotine or take illicit drugs. Research on adolescent women who compete in sports show that this group engages in behaviors which pose a risk to one's health, such as smoking cigarettes, drinking alcohol and risky sexual behaviors, to a small extent [14, 29].

The issue of risky behaviors among physically active persons is undoubtedly relevant, and this area requires further empirical exploration. Competitive sport is associated with a lifestyle aimed at reaching goals in training and achieving success in sport. Mastering a sport requires involvement, self-discipline, and perseverance. On the other hand, alarmingly, the involvement in regular sport-related activities does not entirely eliminate the problem of risky behaviors. The analysis of the prophylactic value of sport cannot be conducted without the inclusion of gender differences, the type of physical activity, and its intensity [30].

GOAL-ORIENTED ACTIVITY AS A PROTECTIVE FACTOR AGAINST RISKY BEHAVIORS

It seems crucial to analyze the motivational features behind undertaking physical activity [31] and the scope of the goal-oriented activity [32]. Factors associated with motivation will indicate whether an individual competing in sports (or an individual that is physically active) will try to overcome barriers and develop their skills, or if will they give up on fulfilling the planned task. Furthermore, determination and persistence are personality traits that protect from engaging in alcohol abuse [14]. It is worth emphasizing that the types of goals and the motivational value thereof depend on the degree of one's involvement in systematic and regular physical activity. Defining exact goals is vital, since well-defined objectives are achievable and motivating to a larger extent [31]. Well-motivated persons adjust their other daily activities to their objective. Individuals who are highly motivated towards physical activity are, therefore, distinguished by high scores in goal-related dimensions, such as: *motivational value* (the extent to which an objective influences the actions undertaken by an individual), *time management* (the level of focus on planning, arranging, and organizing time for physical activity), *persistence in action* (efficiency and persistence of action and the ability to deal with adversities), *heterogeneity of objectives* (the importance of variability of goals of physical activity set by the individual) [31]. In the case of adolescents, noteworthy is the motivational conflict dimension, which describes the level of conflict between physical activity objectives and other objectives [31]. Teenagers

explore their environment in a very intense manner; they experiment with social roles and various skills. Intensive training limits their repertoire of possible activities in some sense, because it leads to school and training taking up most of the day. Therefore, we assumed that the goal orientation of athletes and individuals who undertake recreational physical activity protects them against involvement in risky behaviors. Two hypotheses follow from the theoretical background, which assume that:

1. Performing sports professionally constitutes a protective factor among young females entering adulthood, whereas for young males it is a factor increasing risk.
2. Strong goal orientation constitutes a protective factor against risky behaviors among young adults involved in sport and physical activity.

MATERIAL AND METHODS

PARTICIPANTS

The study included 430 pupils from secondary schools in Tri-City (Gdansk-Sopot-Gdynia; Poland), among them 203 women and 227 men. Subject sampling was purposive: all the participants were about 18 years old ($M = 17.59$, $SD = .58$ years), i.e. at the threshold of adulthood. Almost all (93%) of the pupils of every sport-oriented secondary schools took part in the study. Pupils of 10% of secondary schools, with no sport-oriented profiles, from the same region were used as a control group. These schools had been randomly selected from among 39 public schools. A total of 137 individuals practiced competitive sports (female athletes: $n = 39$; male athletes: $n = 98$); 198 participants were assigned to the physically active group (female physically active: $n = 103$; male physically active: $n = 95$) and 95 to the physically inactive group (female non-active: $n = 61$; male non-active: $n = 34$). Some of the non-athletes declared sporadic involvement in physical activity (PA); the number of various PA forms practiced by these participants was determined as a variable characterizing their PA level.

SURVEY INSTRUMENT

The Inventory of Physical Activity Objectives (IPAO). IPAO by Lipowski & Zaleski [31] was used in order to determine the level of involvement in physical activity and to measure the motivational function of the goal. Respondents answer questions regarding their involvement in competitive sports (both present and previous), and forms and intensity of their physical activity. Four scales of goal-oriented behaviors associated with physical activity are distinguished in the test: (a) *Motivational value*, (b) *Time-management*, (c) *Persistence in action*, and (d) *Motivational conflict*. Respondents are given a (multiple) choice of objectives behind their physical activity. The subjects respond to 18 items, selecting (on a Likert scale) to what extent they agree with a given statement, where 1 means *I do not agree at all* and 5 means *I fully agree*. The IPAO also includes 12 objectives, which are accompanied by a Likert scale (1-5), and the respondents are requested to assess the importance of the listed objectives, where 1 stands for *completely unimportant* and 5 for *very important*. In addition to measuring the attitude of the subjects towards particular goals, the individual scores on the Likert scales are summed up. The final score indicates the *Importance of heterogeneity of the objectives* one sets. The Cronbach's α reliability coefficient for this version reached 0.78.

Experiments with Adulthood. A questionnaire developed by the author determined the type and frequency of risky behaviors one may engage in. Competent referees (four psychologists, three pedagogues and three addiction therapists) selected the items that are traditionally ascribed to adulthood from a list of risky behaviors proposed by many authors [16, 33]. Eventually, the survey included 22 questions and statements that were grouped into the four risk scales: “Nicotine” (*occasional cigarette smoking* – 0.5 point, *once a week* – 1 point; *every day* – 2 points; *e-cigarette once a week* – 0.75 points, *e-cigarette every day* – 1.5 points; *declared nicotine addiction* – 3 points;), “Alcohol” (*alcohol use* – 1 point, *reporting having been drunk once before* – 1 point, *reporting having been drunk 2 or 3 times before* – 1.5 points, *reporting having been drunk 4 or 5 times before* – 3 points), “Drugs” (*drug use* – 2 points; *use of: marijuana* – 1 point, *hashish* – 2 points, *amphetamine* – 3 points, *cocaine* – 5 points, *LSD* – 3 points, *designer drugs* – 3 points, *heroin* – 6 points), and “Risky Sexual Behavior” (*sexual initiation* – 1 point, *risky sex* – 2.5 points, *having sex under the influence of psychoactive substances* – 5 points). The point scale was prepared by assessors who took part in the development of the questionnaire. The global score (“Amount of Risky Behaviors”), being a sum of the scores of the four above mentioned risk scales, amounted up to 45 points.

PROCEDURE

The research project has been granted a positive opinion issued by the Ethic Board for Research Projects of the Institute of Psychology of University of Gdansk in Poland. Participation in the following study was anonymous. Subjects were asked to complete a “pen-and-paper” task of filling-in The IPAO and Experiments with Adulthood, during their advisory class. The whole procedure took approximately 25 minutes.

RESULTS

The analysis of the empirical material was divided into two groups: the first one presents data concerning risky behaviors in specific groups and the aims of physical activity appointed by the sample group, the second one contains the analysis of dependencies.

RISKY BEHAVIORS AMONG SPECIFIC GROUPS

Using MANOVA variance analysis of the main effects (2: sex [male, female] x 3: physical activity [non-active, non-athletes, athletes]), a comparison of involvement in risky behaviors was conducted, with the inclusion of an additional division into athletes, physically active group and non-athletes. In three cases, the gender effect was significant; it was only insignificant in the case of alcohol abuse (Table 1).

Table 1. Risky behaviors among specific groups

Undertaking risky behaviors	Gender		Sport		Gender x sport	
	F	(p)	F	(p)	F	(p)
“Nicotine”	11.95	(< 0.001)	6.44	(0.002)	0.12	(0.879)
“Alcohol”	0.72	(0.397)	3.29	(0.038)	1.28	(0.279)
“Drugs”	13.19	(< 0.001)	0.51	(0.598)	0.88	(0.418)
“Risky Sexual Behavior”	12.49	(< 0.001)	0.87	(0.419)	5.10	(0.006)

The various levels of the sport training effect occurred to be significant in the “Nicotine” and “Alcohol” scales, whereas the effect of gender and the level of sport training interaction was significant only in the case of the “Risky sexual behavior” scale. The post-hoc Tukey test for variable N showed that in the “Nicotine” scale women have presented lower results than men ($p = 0.011$). As concerns the discrepancies related to training or not training sport at a professional level, it occurred that athletes were involved in smoking cigarettes more rarely than non-active, although the post-hoc test showed this difference was on the border of statistical significance ($p = 0.051$). The post-hoc test of the “Alcohol” scale showed no significant differences, despite the significant effect in the variance analysis. The “Drugs” scale analysis indicated that men, significantly more often than women (post-hoc; $p < 0.001$), were involved in this type of risky behavior. Similarly, men more often than women were involved in risky sexual behaviors (post-hoc; $p < 0.001$). This scale also presented the effect of gender and sport training interaction—men training sport at a professional level obtained higher results than all female groups: non-active ($p = 0.025$); active non-athletes ($p = 0.006$) and female athletes ($p = 0.002$). Figure 1 is a graphic representation of the averages.

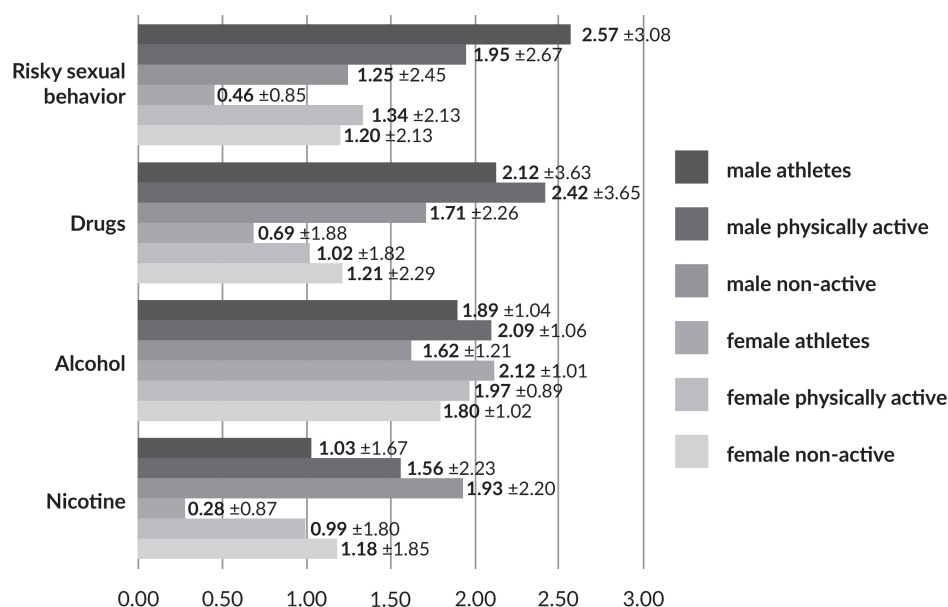


Fig. 1. Engagement in risky behaviors – gender and sport participation differences

THE AIMS OF PHYSICAL ACTIVITY AMONG SPECIFIC GROUPS

The MANOVA variance analysis of the main effects (2:sex [male, female] x 2: professional sport [physically active, athletes]), including the importance of specific aims has shown discrepancies among the sample groups (this comparison did not include persons not practicing physical activity; Table 2).

Table 2. Intergroup differences in the importance of PA goals

Goals of PA	Gender		Sport		Gender x sport	
	F	(p)	F	(p)	F	(p)
Health	0.83	(0.363)	0.00	(0.970)	5.40	(0.021)
Physical fitness	0.25	(0.615)	12.49	(< 0.001)	4.23	(0.040)
Company of other people	0.48	(0.488)	19.78	(< 0.001)	2.46	(0.118)
Fit, shapely body	2.98	(0.085)	1.14	(0.287)	6.95	(0.009)
Wellbeing	2.88	(0.091)	3.30	(0.070)	2.15	(0.144)
Being physically active and fit according to fashion	2.08	(0.150)	2.01	(0.157)	2.44	(0.119)
Boosting confidence	0.49	(0.486)	9.72	(0.002)	6.76	(0.010)
Pleasure from PA	0.70	(0.403)	23.38	(< .0001)	1.13	(0.288)
Escape from everyday life	0.70	(0.402)	8.24	(0.004)	1.36	(0.245)
Managing stress	0.00	(0.994)	4.46	(0.035)	0.09	(0.761)
Fulfilling the need for activity	2.83	(0.093)	3.50	(0.062)	1.34	(0.248)
Promoting PA by setting a behavior example	0.16	(0.686)	5.99	(0.015)	0.07	(0.794)

Athletes assessed the following goals higher than non-athletes: physical fitness ($p < 0.001$); the company of other people ($p < 0.001$); boosting confidence ($p < 0.001$), pleasure from physical activity ($p < 0.001$); escape from everyday life ($p < 0.001$) and promoting physical activity ($p = 0.019$). Furthermore, the effect of gender and sport training interaction occurred in the case of assessing health goals. Non-athlete women assessed this goal considerably higher than non-athlete men ($p = 0.041$); physical fitness was a more important goal for male athletes than for male ($p = 0.001$) and female non-athletes ($p = 0.005$); a fit, shapely body was less important for male non-athletes than for female non-athletes ($p = 0.002$) and male athletes ($p = 0.013$); a similar difference was observed in boosting confidence, which was assessed as less important for male non-athletes than for female non-athletes ($p = 0.036$) and male athletes ($p < 0.001$).

The next step in the analysis was to conduct a comparison of specific sample groups in terms of the goal type and their motivational function through variance analysis of the main effects (MANOVA 2: sex x 2: professional sport; Table 3).

Table 3. Intergroup differences in scale IPAQ assessment

Scale IPAQ	Gender		Sport		Gender x sport	
	F	(p)	F	(p)	F	(p)
Motivational value	0.35	(0.553)	17.68	(< 0.001)	2.64	(0.105)
Time-management	0.72	(0.396)	9.48	(0.002)	0.00	(0.975)
Persistence in action	0.09	(0.768)	0.05	(0.819)	3.90	(0.049)
Motivational conflict	1.11	(0.292)	0.00	(0.974)	1.04	(0.308)
Importance of heterogeneity of the objectives	2.30	(0.130)	22.89	(< 0.001)	2.95	(0.087)

The post-hoc test analysis showed that athletes achieved higher results than non-athletes in the motivational value scale ($p < 0.001$), in the time management scale ($p = 0.001$), and in the importance of heterogeneity of the objectives scale ($p < 0.001$).

THE MOTIVATIONAL FUNCTION OF THE AIM OF PHYSICAL ACTIVITY AND RISKY BEHAVIORS

The correlation analysis showed a number of correlations between the extent of the aims of physical activity, their motivational function and risky behaviors. In the female athletes group a relation between the goal motivational value and a tendency to involve in alcohol use was found ($r = -0.37$; $p = 0.022$). In the male athletes group there was a relationship between alcohol use and persistence in action ($r = -0.23$; $p = 0.021$). An interesting relationship was observed in the male non-athletes group: it occurred that there was a significant relationship between the motivational value of physical activity with the tendency to become involved in risky behavior of alcohol use, which was surprisingly positive ($r = 0.35$; $p < 0.001$). Such a relationship was not observed in the remaining groups.

Apart from that, there were interesting correlations between the importance that female players put on particular physical activity goals and involvement in risky behaviors. Interesting relationships were only observed in the female athletes group. The correlations are presented in Table 4.

Table 4. Correlations between the PA importance goals and risky behaviors among female athletes

Goal of PA	Nicotine		Alcohol		Drugs		Sex	
	r	(p)	r	(p)	r	(p)	r	(p)
Physical fitness	-0.50	(0.001)	-0.05	(0.784)	-0.22	(0.174)	-0.16	(0.330)
Fit figure	-0.29	(0.073)	-0.32	(.0046)	-0.08	(0.622)	0.10	(0.565)
Boosting confidence	-0.10	(0.526)	-0.60	(< 0.001)	-0.33	(0.038)	-0.01	(0.946)
Pleasure from PA	-0.39	(0.013)	-0.16	(0.331)	-0.15	(0.373)	-0.13	(0.444)
Promoting PA	-0.27	(0.102)	-0.26	(0.117)	-0.56	(0.000)	-0.36	(0.026)

In due course, differences in strength of the motivational function of the physical activity goal on risky behaviors were analyzed. The analysis was conducted separately for every type of behavior and, additionally, for all of the sample groups: female athletes, physically active female, male athletes, physically active male (Fig. 2).

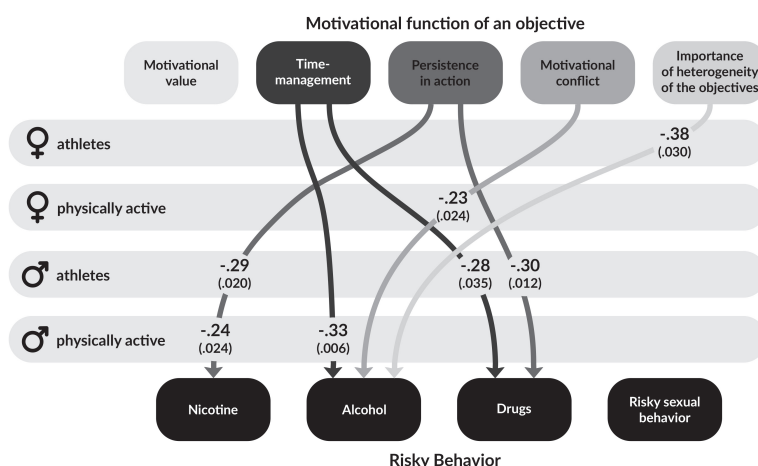


Fig. 2. Statistically significant protective factors against risky behaviors

Persistence in action was a strong protective factor against “Nicotine” among athletes and physically active males. In the case of “Alcohol”, the *Importance of heterogeneity of the objectives* was the protective factor for female athletes, whereas for female non-athletes it is a *Motivational conflict*. It was checked through the Indicator Variables in Regression whether there were any discrepancies in the strength of these influences in the groups (β). It appeared that the difference in the impact of the *Importance of heterogeneity of the objectives* on “Alcohol” occurred between female athletes and physically active female ($\beta = .16$; $p = 0.169$; dummy variable: $t = 2.72$; $p = 0.007$), but also when compared with male athletes ($\beta = .19$; $p = 0.105$; dummy variable: $t = 2.64$; $p = 0.009$). Another statistically significant difference occurred in the scope of the influence of *Time management* on “Alcohol” between physically active male and female ($\beta = -0.03$; $p = 0.820$; dummy variable: $t = 2.25$; $p = 0.026$).

DISCUSSION

This article supports the view that sporting goals play a protective role for young females who practice sport professionally. The mechanism seems to be more complicated in young males – setting sports goals and high motivation are not the only crucial factors. This study showed that greater involvement in physical activity is associated with lower likelihood of cigarette smoking. Furthermore, practicing sport was shown to be a factor protecting women at the threshold of adulthood against risky sexual behaviors and illicit drug use. It was also shown that young male athletes undertook risky sexual behaviors more often than females who do sport. Goal orientation turned out to be a factor protecting against involvement in risky behaviors. In the case of young male athletes, *Persistence in action* was particularly important, as high scores in this dimension were reflected by a lower likelihood of cigarette smoking and illicit drug use (the latter being also associated with *Time-management*). In the case of young female athletes, in turn, the *Importance of heterogeneity of objectives* turned out to be a buffering dimension protecting them against risky behavior.

Young sportspeople are a very particular group, characterized by a manner of functioning different to the majority of their peers – mostly in the purposefulness of actions undertaken, which are primarily oriented towards success in sports competitions. Additionally, most goals concerning physical activity were assessed as more important by professional sportspeople. What may seem surprising is the fact that persons practicing professional sport assessed taking pleasure in this activity higher, in contrast to how one might think that individuals who take up arduous, monotonous training would feel less satisfied than those who practice sport of their own volition. The diversity and influence of physical activity goals also affected the level of physical activity – in this research, physically active persons who trained weekly assessed the goals as less important. However, the results of Cooke, Tully, Cupples, Gilliland, Gormley [32] have shown that persons who were involved in goal setting presented a considerably higher level of physical activity than persons who were not. As well as this, it has been observed among middle-aged women that physical activity goals such as good mood or stress reduction are a greater motivation to train than loss of body weight or health [34].

It is also worth mentioning that, in this research, the main physical activity goal among women, regardless of whether they were professionals or physically active without competing, was a fit physique and physical fitness. The preference of the former goal may be related to the need for conformity to the ideal promoted by the media. This trend is particularly visible in Western cultures, where an attractive appearance is connected with satisfaction with life, and a fit physique is considered beautiful and sexually attractive. It is also interesting that research among Spanish adolescents has shown that perceived sporting competence is positively correlated with current physical activity, and physical attractiveness positively correlated with physical activity in boys and negatively in girls [35].

Apart from the diversity and meaning attributed to physical activity goals, it is also worth analyzing the type of purposeful behavior of professional sportspeople and physically active persons in the context of risky behaviors. Professionals achieved higher scores on the scale of time management and importance of heterogeneity of objectives. Paying attention to the heterogeneity of objectives may be associated with greater behavioral flexibility, since difficulty in achieving one goal may result in putting greater emphasis on another. Lower heterogeneity of objectives may be in turn associated with greater frustration which may be counterbalanced by risky behaviors. Higher scores among sportspeople show their better-developed ability to self-regulate, which, according to research [36], especially when becoming an adult, constitutes a safety buffer against risky behaviors. This paper has demonstrated the protective role of self-regulation, especially against risky sexual behaviors. The results of this research indicate that *Persistence in action* is the main motivational factor with a protective function. It prevents the occurrence of risky behaviors such as smoking cigarettes, alcohol or drug use. It seems that sacrificing a significant part of one's life in order to achieve success counters factors which have a negative influence on sporting performance. In relation to risky behaviors, it has also been confirmed by other authors that greater involvement in sport counters nicotine addiction, especially when the sportspeople were satisfied with the goals they achieved [36]. It is also necessary to refer to research by Verkooijen, Nielsen and Kremers who show that motives for undertaking physical activity affect involvement in cigarette smoking among teenagers [37]. If the goal of physical activity was health, and for females – friendships or stress relief, regardless of the level of sport activity, smoking cigarettes occurred more rarely. However, when the motives concerned self-esteem, losing weight, and for men – friendships, the described correlation did not show statistically significant differences, or there was a positive correlation between them. This indicates that setting goals connected with physical fitness and the pleasure of physical activity was less related to cigarette smoking. Persons setting goals related to their physique and boosting confidence used alcohol at a lower rate. Apart from this, a negative correlation was observed between promoting physical activity and involvement in risky behaviors, as well as of boosting confidence and drug use. Research concerning involvement in alcohol use among intercollegiate athletes has indicated that competitiveness, oriented towards winning, and goal orientation are connected with the level of alcohol consumption, but not with problems concerning alcohol use [38].

Greater involvement in professional sport decreased the probability of intoxication in the hopes of achieving success. Physically active young women know their goals and are able to give a higher priority to the advantages of being persistent in pursuing their goals than to the short-term pleasures of alcohol drinking, drug use or risky sexual behaviors. It may, therefore, be stated that female athletes on the verge of adulthood may be more mature than female non-athletes, male athletes, and male non-athletes. They concentrate on set goals and to a smaller extent are involved in the risky behaviors analyzed in this paper. It is quite surprising that professional sportspeople, who regard their goals as more important, presented a higher level of risky sexual behaviors. This can be due to the fact that they overcome frustrations and tension connected with sport activity in a way or in accordance with the dual model of adolescent risk taking [39], in which immature self-control mechanisms do not stop behaviors related to the need for reward-seeking. It is worth mentioning that the kind of goal which also increased the probability of risky sexual behaviors was in conflict with other life goals. A young sportsperson who dedicates all of their life to training has limited chances to realize other needs which naturally come with their age. Due to the low maturity of the impulse control mechanism, in some moments the young sportsman undertakes risky sexual behavior.

CONCLUSIONS

Appointing sport goals has a protective role for females who professionally practice sport. In relation to young males, the mechanism seems to be more complicated –the most crucial factor is not only sport goal appointment and high motivation. It would be worthwhile to introduce prophylactic actions shaping the ability of active and goal-oriented emotion-controlling strategies. Other ways could be considered by young professionals as not masculine and not suitable for the stereotype of a strong, fit and successful sportsperson. The role of sport psychologist should also be considered in the context of young sportsman's risky behavior. Mental health counseling is one of the future goals for psychologists working with athletes [40].

Our findings may have some practical implications by way of recommendations for youth sport psychologists, who should focus on the structure of physical activity-related objectives. Particular emphasis should be put on persistence in action and the importance of objective heterogeneity, as these two dimensions may constitute a factor protecting young adult sportspersons against drinking alcohol and smoking cigarettes.

One potential limitation of this study may stem from the fact that it was conducted in a single Polish urban center, and therefore its results can not necessarily be generalized to the whole population of young adults, including those from rural settings, small towns, or individuals from other countries. Consequently, future research should be expanded to subjects from other centers in Poland and abroad. Moreover, the results of future studies dealing with the problem in question need to be adjusted for the level at which participating athletes are competing. Furthermore, a longitudinal study should be conducted to identify a causal relationship between the variables we have analyzed; such a study should include individuals at the threshold of adolescence, and follow up until adulthood. It is likely that this would document

the dynamics in the previously discussed dimensions of physical activity-related objectives, as well as ultimately confirm their role in the prevention of risky behaviors.

REFERENCES

- [1] Arnett JJ. Emerging adulthood: What is it, and what is it good for? *Child Dev Perspect.* 2007;1:68-73. doi: 10.1111/j.1750-8606.2007.00016.x.
- [2] Arnett JJ. Oh, grow up! Generational grumbling and the new life stage of emerging adulthood – Commentary on Trzesniewski, & Donnellan (2010). *Perspect Psychol Sci.* 2010;5:89-92. doi: 10.1177/1745691609357016.
- [3] Kutra G. Rozwój myślenia osób dorastających a wybrane aspekty aktywności prospektywnej [Cognitive development in adolescence and selected manifestations of prospective action]. *Psychologia Rozwojowa.* 2009;14:65-76. Polish.
- [4] Shulman S, Shavit-Pesach T, Walsh, SD et al. Self-regulatory processes and psychological symptoms among emerging adults. *J Youth Stud.* 2009;12:111-120. doi: 10.1080/13676260802558862.
- [5] Kirby D. Understanding what works and what doesn't in reducing adolescent sexual risk-taking. *Fam PlannPerspect.* 2001;33:276-281.
- [6] Peach H, Gaultney JF. Sleep, impulse control, and sensation-seeking predict delinquent behavior in adolescents, emerging adults, and adults. *J Adolescent Health.* 2013;53:293-299. doi: 10.1016/j.jadohealth.2013.03.012.
- [7] Bell CC, McBride DF. Affect Regulation and Prevention of Risky Behaviors. *JAMA.* 2010;304:565-566. doi: 10.1001/jama.2010.1058.
- [8] Kenney SR, Hummer JF, LaBrie JW. An examination of prepartying and drinking game playing during high school and their impact on alcohol-related risk upon entrance into college. *J Youth Adolescence.* 2010;39:999-1011. doi: 10.1007/s10964-009-9473-1.
- [9] Turchik JA, Garske JP, Probst DR, Irvin CR. Personality, sexuality, and substance use as predictors of sexual risk taking in college students. *J Sex Res.* 2010;47:411-419. doi: 10.1080/00224490903161621.
- [10] Pharo H, Sim C, Graham M, Gross J, Hayne H. Risky business: executive function, personality, and reckless behavior during adolescence and emerging adulthood. *Behav Neurosci.* 2011;125:970-978. doi: 10.1037/a0025768.
- [11] Gullone E, Moore SM, Moss S, Boyd CP. The Adolescent Risk-Taking Questionnaire (ARQ): development and psychometric evaluation. *J Adolescent Res.* 2000;15:231-250. doi: 10.1177/0743558400152003.
- [12] Boyes R, O'Sullivan DE, Linden B, McIsaac M, Pickett W. Gender-specific associations between involvement in team sport culture and Canadian adolescents' substance-use behavior. *SSMPopul Health.* 2017;3:663-673. doi: 10.1016/j.ssmph.2017.08.006.
- [13] Auerbach RP, Tsai B, Abela JRZ. Temporal relationships among depressive symptoms, risky behavior engagement, perceived control, and gender in a sample of adolescents. *J Res Adolescence.* 2010;20:726-747. doi: 10.1111/j.1532-7795.2010.00657.x.
- [14] Lipowski M, Lipowska M, Jochimek M, Krokosz D. Resiliency as a factor protecting youths from risky behaviour: moderating effects of gender and sport. *Eur J Sport Sci.* 2016;16:246-255. doi: 10.1080/17461391.2015.1024755.
- [15] Michael K. Sexual behavior and risk-taking among adolescents: Gender, socio-economic status, sexual status, and longitudinal analysis. *Megamot.* 2016;50:117-152.
- [16] Schuster R, Mermelstein R, Wakschlag L. Gender-specific relationships between depressive symptoms, marijuana use, parental communication and risky sexual behavior in adolescence. *J Youth Adolescence.* 2013;42:1194-1209. doi: 10.1007/s10964-012-9809-0.
- [17] Makarowski R, Lipowski M, Marszał M, Czarnowski W. Temperamentalne podłoże aktywności sportowej jako czynnik ochronny chorób serca – poszukiwanie modelu [Temperamental determinants of physical activity as preventive factor of heart diseases—in the search of the model]. *Medycyna Sportowa.* 2009;25:83-94. Polish.
- [18] Larson RW, Hansen DM, Moneta G. Differing profiles of developmental experiences across types of organized youth activities. *Dev Psychol.* 2006;42:849-863. doi: 10.1037/0012-1649.42.5.849.
- [19] Lipowski M, Bieleninik Ł. Personality superfactors and healthy behaviors of professional athletes. *Curr Issues Personal Psychol.* 2014;2:57-67. doi: 10.5114/cipp.2014.44302.
- [20] Litwic-Kaminska K, Izdebski P. Resiliency against stress among athletes. *Health Psychol Rep.* 2016;4:79-90. doi: 10.5114/hpr.2016.5439.
- [21] Lipowski M. Level of optimism and health behavior in athletes. *Med Sci Monitor.* 2012;18:39-43. doi: 10.12659/MSM.882200.
- [22] Patton GC, Tollit MM, Romaniuk H, Spence SH, Sheffield J, Sawyer MG. A prospective study of the effects of optimism on adolescent health risks. *Pediatrics.* 2011;127:308-316. doi: 10.1542/peds.2010-0748.
- [23] Weiland BJ, Nigg JT, Welsh et al. Resiliency in adolescents at high risk for substance abuse: Flexible adaptation via subthalamic nucleus and linkage to drinking and drug use in early adulthood. *Alcohol ClinExp Res.* 2012;36:1355-1364. doi:10.1111/j.1530-0277.2012.01741.x.

- [24] Vuori MT, Kannas LK, Villberg J, Ojala SA, Tynjala JA, Valimaa RS. Is physical activity associated with low-risk health behaviours among 15-year-old adolescents in Finland? *Scand J Public Health*. 2012;40:61-68. doi: 10.1177/1403494811423429.
- [25] Tewksbury R, Higgins GE, Mustaine EE. Binge drinking among college athletes and non-athletes. *Deviant Behav*. 2008;29:275-293. doi: 10.1080/01639620701588040.
- [26] Reel JJ, Joy E, Hellstrom EM. Reducing high-risk sexual behaviors among college athletes. *J Sport Psychol Action*. 2012;3:21-29. doi: 10.1080/21520704.2011.649193.
- [27] Lisha NE, Sussman S. Relationship of high school and college sports participation with alcohol, tobacco, and illicit drug use: A review. *Addict Behav*. 2010;35:399-407. doi:10.1016/j.addbeh.2009.12.032.
- [28] Huang JH, Jacobs DF, Derevensky JL. Sexual risk-taking behaviors, gambling, and heavy drinking among US college athletes. *Arch Sex Behav*. 2010;39:706-713. doi:10.1007/s10508-009-9521-7.
- [29] Bobrowski K. Czas wolny a zachowania ryzykowne młodzieży [Free time activities and adolescents' risk behaviours]. *Alkohol Narkom*. 2007;20:267-287. Polish.
- [30] Peretti-Watel P, Beck F, Legleve S. Beyond the U-curve: the relationship between sport and alcohol, cigarette and cannabis use in adolescents. *Addiction*. 2002;97:707-716. doi: 10.1046/j.1360-0443.2002.00116.x.
- [31] Lipowski M, Zaleski Z. Inventory of Physical Activity Objectives (IPAO) - a new method in measuring motives for physical activity and sport. *Health Psychol Rep*. 2015;3:47-58. doi: 10.5114/hpr.2015.49462.
- [32] Cooke PA, Tully MA, Cupples ME, Gilliland AE, Gormley GJ. A randomised control trial of experiential learning to promote physical activity. *Educ Prim Care*. 2013;24:427-435. doi: 10.1016/j.jpeds.2005.01.055.
- [33] Grunbaum JA, Kann L, Kinchen S, et al. Youth risk behavior surveillance - United States, 2003 (Abridged). *J School Health*. 2004;74:307-324.
- [34] Segar ML, Eccles JS, Richardson CR. Type of physical activity goal influences participation in healthy midlife women. *Women Health Iss*. 2008;18:281-291. doi: 10.1016/j.whi.2008.02.003.
- [35] Moreno-Murcia JA, Hellín P, González-Cutre D, Martínez-Galindo C. Influence of perceived sport competence and body attractiveness on physical activity and other healthy lifestyle habits in adolescents. *Span J Psychol*. 2011;14:282-292. doi: 10.5209/rev_SJOP.2011.v14.n1.25.
- [36] Quinn PD, Fromme K. Self-regulation as a protective factor against risky drinking and sexual behavior. *Psychol Addict Behav*. 2010;24:376-385. doi: 10.1037/a0018547.
- [37] VerkooijenKT, Nielsen GA, Kremers SP. Leisure time physical activity motives and smoking in adolescence. *Psychol Sport Exerc*. 2009;10:559-564. doi: 10.1016/j.psychsport.2009.01.001.
- [38] Weaver CC, Martens MP, Cadigan JM, Takamatsu SK, Treloar HR, Pedersen ER. Sport-related achievement motivation and alcohol outcomes: an athlete-specific risk factor among intercollegiate athletes. *Addict Behav*. 2013;38:2930-2936. doi: 10.1016/j.addbeh.2013.08.021.
- [39] Steinberg L. A dual systems model of adolescent risk taking. *Dev Psychobiol*. 2010;52:216-224. doi: 10.1002/dev.20445.
- [40] Aoyagi MW, Portenga ST, Poczwardowski A, Cohen AB, Statler T. Reflections and directions: The profession of sport psychology past, present, and future. *Prof Psychol Res Pr*. 2012;43:32-38. doi:10.1037/a0025676.

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