

The association between the years and modes of sports training and levels of moral competence across eleven sports

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Abstract

Background and Study Aim Research on moral competency in sports is rare, and findings are inconsistent. These findings point to moral development as a multifaceted and complex process. This process is mediated by various life situations and dilemma choices. Sport can play a crucial role in this area with its often 'role-taking' experience and confrontations with personal moral standards. This study aimed to analyze the relationship of competency levels and sport experience across different sports.

Material and Methods A sample of university students in sport-related faculties (N = 947) was assessed with the use of Moral Competence test (MCT). The group was divided into 11 predetermined types of sports, training modes (amateur/professional), and indicated years of training practice.

Results The general moral competency level in the overall researched sample of students was low, but similar to their peer-age reference groups found in relevant literature. The findings indicated some differences in moral competency levels between amateurs and professionals. Amateurs showed a higher competency levels in five types of sports (non-invasion games, martial arts/fighting sports, aquatic boating sports). In contrast, professionals showed a higher competency level in dance sports. The only positive, moderate correlation between years of training and moral competency level was found with professional athletes in aquatic boating sports: the longer they trained, the higher their moral competency level was.

Conclusions These results offer new insight into the impact of sports on moral development and can act as a solid foundation for further in-depth research in this area.

Keywords: university students, moral competency, length of sport experience, amateurs, professional, athletes

Introduction

Youth sports can be an important part of the schooling process since they can help to promote physical fitness, teamwork, discipline, and other valuable skills and qualities, becoming a valuable tool for helping students develop their physical and mental abilities and their character and moral standards [1]. Most circumstances occurring during sporting activities can be easily modified and controlled by a skilful 'person in charge' (parent/teacher/coach) willing to foster a child's moral growth in both directions: the positive and negative outcomes from behaviors in sports [2].

Sport is a field of such clashes of views and behaviors heated by the desire to win, and yet under constraints of physical fatigue. Unfortunately, sports coaches and physical education (PE) teachers often lack professional training in stimulating moral/social development [3, 4, 5]. Little is known about the scale of influence their (coaches/PE teachers) own level of moral competence has on their trainees and whether and how this might relate to the actual training process. In yet another review Peláez et

al. [6] findings suggest that modelling, creation of a socio-moral context, teaching moral skills and values, and discussions with young athletes are the main strategies that turn out to be the most effectively used by sport coaches in promoting positive moral behaviour, therefore coaches have to be sensitized about the moral role they play and be aware of potential (positive/negative) impact of their conduct and attitudes.

On one side, findings from a study by Johansson et al. [7] suggest that the most prominent way to teach moral values via school education is engaging children in moral activities, followed by teaching practices for transmitting moral values (not necessarily connected to sports). Whereas the literature in the field of sport has pointed at sport coaches as those with major contribution to the moral standards in children and youth [8]. It has been associated with ways of dealing and facing moral issues that arise in the practice of sport with children. Coaches indicated two possible perspectives of morality in sports – the moral perspective (helping children differentiate right from wrong) and the social perspective (concerning sport involvement and team dynamics), showing again the bridging link of sport with outside-of-sport life.

Some influence need also to be accredited to other educational factors. Jacobs et. al. [9] showed that when PE teachers design classes involving tasks stimulating development of moral skills they emphasize learning via social interaction and thus contribute to the social and moral sound development of their pupils. Jacobs et al. [9] state that commonalities in curricular practices found in their study and the individual differences together reflect a globalized socialization of PE teachers into and through sport, accompanied by differences rooted in how they as individuals make sense of their upbringing. Therefore they recommend the use of a contextually-based with bottom-up direction approach curricula contents and sport-related tasks enabling pupils to explore the dynamics of moral development and thus building their moral competences.

Interestingly, when comparing 15–17-year-old adolescents Bronikowska et al. [5] noticed that the interaction between levels of moral competence and sport amateur/professional involvement was insignificant. It was also observed that in examined youth moral competence levels did not correlate with years of training (neither in amateurs/professionals) nor team/individual sports. That finding was contrary to the one from a study by Miller and Jarman [10], who previously showed that basketball (as an example of a team sport), and swimming (as an example of individual sport) create ethical climates that differ significantly. The contradiction to the previously mentioned study by Bronikowska et al. [5] can be attributed to the difference in theoretical frameworks – Miller and Jarman [10] study had focused on ethical standards. In sports ethical principles guiding a person toward making the choices that would contribute to the common good for all concern usually qualities such as fairness, responsibility, integrity, sportsmanship or respect. While Bronikowska et al. [5] focused on moral competency. Bronikowska et al. [5] found no strong correlations between factors such as team/individual and amateur/professional training, indicating that, at adolescent age, the relatively short longevity of training experience might not be sufficient to mediate the level of moral competency. Interestingly, a significant association between years of sports training and moral competence levels was proved in college-age students in an earlier study by Bronikowska et al. [4]. However, this relationship only applied to male respondents (aged 19–24) professionally engaged in sports for a long time whose levels of moral competency was assessed as high. The opposite outcome was found with female peer respondents where higher levels of moral competency was presented by sportswomen with a shorter involvement in professional sports. It should be stressed that some previous studies have indicated differences between women and

men in their moral development regarding various sports [11]. However, many findings show a lack of significant gender differences in moral development [4, 12, 13].

In 2016 Lind developed a tool MCT to help assess the level of moral competence [14]. Theoretical framework was set in the Kohlberg's theory of structural-developmental of morality. According to his theory moral competence was defined as the ability to resolve moral/social problems and potential dilemmas with the use of moral principles and via deliberate peaceful actions. These kinds of actions should be more appreciated than cheating, violence, or bowing down to others [14]. It was expected from an individual that while dealing with occurring arguments and dilemmas their will use own moral criteria, and will not rely on agreement-like criteria and the opinions of others – that kind of behavior was believed to indicate an individual's moral qualities. According to Kohlberg [15], it was life experiences encountered by a person in various contexts and settings that play a crucial role in their moral choices and behaviors. Kohlberg presented a model that was referring to the structure of reasoning with aspects like specific norms, values, and beliefs included as well. The three-level model [15] assumed that any person grows morally from the pre-conventional to the conventional to the post-conventional levels. However, it is worth noting that Kohlberg clearly stated that not everyone would be able to attain the most advanced stages of such development in their life; indeed, this may concern only a very few.

It is believed that higher the level of moral development increases the chances that individuals in their moral reasoning and actions would use justice-based orientation. However, Shields and Bredemeier [16] see it differently when they claim that in sports rules and goals are artificially designed, but with well-organized and hierarchical structures. In such environment the ones who represent authority might be less dominant. They predict that the likeness that in a specific context the values and norms of heteronomous morality will be prominent in an athlete's reasoning is greater, and that this explains why sportspersons employ a kind of 'game reasoning', and they use it in solving moral conflicts both inside and outside sports. Earlier findings [5] might indicate that a recreational approach to sports and other forms of physical activity, no matter whether team or individual, can be a great way to promote integration, teamwork, cooperation, and other valuable skills and qualities [17], and a fun and enjoyable way to stay active and healthy in early adulthood.

Nevertheless, many moral dilemmas can also arise in sports, concerning such issues as doping (performance-enhancing drug use), match-fixing (manipulating the outcome of a game for financial

gain), and violence on and off the field. These behaviors are generally considered immoral and could have serious consequences for the athletes and teams involved and the integrity and credibility of the sport. In addition, due to the global reach and popularity of broadcasted sports events, it often spills over into everyday life, lowering interpersonal standards and routines. Pierce, Gould, & Camiré [18] state that only when a sport skill is successfully transferred and applied outside the sport can it be considered a life skill. This is a clear linking bridge between outside of sport moral standards of everyday life situations and those taking place in a sport specific environment (on a sport arena/track/field). But the question whether it is a role of sport to provide such a bridge remains unanswered and is dealt with differently in all sort of cultural and education traditions of various countries.

Studies on long-term elite sport athletes indicate that sport-specific moral reasoning can also be applied to various moral dilemmas and conflicts outside the field of sport. In a study by Shields and Bredemeier [16] no differences in moral reasoning were found when comparing nonathletes and peer high school basketball players. Their research showed also that more mature moral reasoning was accredited to females peers (their sample was not very big, though). Nevertheless, the type of sport can presumably also be a crucial factor in stimulating the moral development.

It is understandable that different sport traditions and legal regulations in various countries will lead to forming different, often debatable definitions of sport practice. Therefore, for the purpose of this study, we have defined individual sports as sporting activities that involve a single individual competing against other individuals or against the clock, with success typically measured by an athlete's performance. These sports can be physically and mentally demanding since athletes must be self-motivated and self-disciplined to succeed. Individual sports can also involve complex strategies and tactics since athletes may need to adapt their approach based on the strengths and weaknesses of their opponents or the conditions of the competition. They also may create some moral dilemmas. For example, in some sports, an individual may be judged based on their performance and face pressure to win at all costs. It is easy to picture a scenario in which ethical challenges, such as the temptation to gain an advantage by cheating or engaging in other unethical behaviors, may become very tempting to someone with a flexible moral compass. In such situations, coaches must monitor the situation and remind the athlete of the importance of fair play and resisting the lure of cheating or engaging in other unethical behaviors.

In a meta-analysis review Milstein et al. [19] found that the relationship between rivalry and

performance is more robust for individual rivalry compared to group rivalry. The findings have been analyzed further and indicated that for a group rivalry correlations were positive with significant impact only in sports and, when analyzed in outside-of-sport world only in donation-raising organizations. Context of rivalry can also create different moral challenges in team sports, where the focus is often on the entire team's performance. It would instead require balancing the interests of the team with those of individual players, hopefully via the promotion of teamwork and proper cooperation among team members. Therefore, in team sports, coaches must remind the players of the importance of working together, supporting one another, and respecting the game's rules and regulations. For this study, we have defined team sports as sporting activities that involve two or more teams competing against one another. These sports typically involve a group of players working together to achieve a common goal, such as scoring more points or goals than the opposing team. Players typically have specific roles and responsibilities, and success often depends on the ability of the team to work together effectively. Team sports can also involve complex strategies and tactics since teams may need to coordinate their movements and actions to outmaneuver their opponents.

Nia and Besharat [20] found that athletes from team sports performed better in tests on agreeableness and sociotropy, while those from individual sports performed better on conscientiousness and autonomy scales. This difference might be explained through the different ways of dealing with self-management. In individual sports, athletes learn to rely on themselves, which builds conscientiousness and a need for self-discipline. In team sports, where the outcome depends on the team's performance and many unpredictable stressors mediate the final score, agreeableness is more vital.

Some moral skills and thus moral competency levels might also differ due to the involvement either in individual or team sports, and even further, within individual sports (indicating differences between different environments, such as swimming and athletics), or team invasion (football) vs non-invasion (volleyball) games. In addition, an individual's moral development through sport might be shaped by the rules of a specific sport, the nature of the rivalry process, or other mitigating circumstances occurring during the many years of training. It may also depend on the kind of commitment to the training – amateur vs professional. For the purpose of our study we decided that engaging in a regular, federated system of competitions organized by sports federations will mean professional engagement, while participating in sports for pleasure as a hobby would be categorized as an amateur engagement [21]. The association

between the above mentioned issues have not been research to the depth yet.

Since no studies have examined these aspects of moral competency and others have reported inconsistent findings [22], we designed a study that aimed to assess moral competency levels across various types of sports and establish its potential relationship with the training experience (training modes: amateur vs professional), and years of engagement. Based on the conclusions of the abovementioned studies, this study hypothesized that the mode of involvement (amateur/professional) and years of engagement (sport experience) is related with the moral reasoning scores (C-index) of those participating in sports. This study also assumes that moral levels would vary significantly among various sports.

Materials and Methods

Participants

To determine reasonable sample size reflecting the targeted population (students of sport studies) a sample calculator was used [23, 24]. Based on the total population of students at Poznan Physical Education University (total N = 2921), adequate size of the study sample was established to be 904 responders, assuming a confidence level alpha of 0.97, fraction size of 0.5, and maximum error of 3%.

Study was conducted in year 2022, and included 974 respondents. All respondents came from the following faculties: Physical Education, Sport, Tourism and Recreation, and Physiotherapy. The study sample comprised 569 amateur (43.7% female) and 405 professional (45.2% female) athletes, with an additional 62 nonathlete respondents included in the study but excluded from analytic comparisons between sports as unfit for its purpose. The average age of the respondents was 20.78 ± 1.99 years.

Research Design

Division of activities (sports by type)

Sports can be classified by the type and intensity of exercise performed, the scoring system or environment used, the number of players (team/individual), and the danger of bodily injury from collisions. In our study, we divided sports based on similarities in the characteristics of their training process and the specifics of their competition regulations. For this study we created a classification of eleven types of sports: (1) invasion games, (2) non-invasion games, (3) net/wall racket games, (4) martial arts, (5) aquatic boating sports, (6) aquatic non-boating sports, (7) cycling sports, (8) track and field sports, (9) strength and fitness sports, (10) gymnastic sports, and (11) dance sports. The division and description of sports were based on various publicly available sources, including definitions in sports encyclopaedias and other online dictionaries

[25, 26, 27], and the final division of sports was done by the authors. The list of sports divisions with their descriptions is presented below:

1. Invasion games are sports that typically aim at invading opponents' side of the field while creating opportunities of scoring a point/goal. Most of invasion sports are usually fast-paced and require teamwork (e.g., communication and cooperation skills and ability to submit) to control an object (e.g., ball, puck, frisbee), keeping possession, moving into a scoring position, and preventing the other team from scoring a point/goal. Typical examples of invasion sports would include football (also soccer), rugby, basketball, handball or hockey (both lawn and ice hockey).

2. Non-invasion games are sports that do not require players to move to the opponent's side of the field to a score point. Points are usually scored by the collective efforts of a team or by opposition mistakes. One example of this type of sport is volleyball.

3. Net/wall/racquet sports are those in which different types of racquets are used as playing equipment. Their main characteristic is individual or doubles competition. Points are earned by strategically hitting the ball/shuttlecock into the opponent's field (tennis, badminton, or table tennis) or against a wall (squash) such that the opponent misses it.

4. Martial arts and other fighting sports are usually traditional activities that originate from Japanese, Chinese, or Korean forms of fighting or defending (e.g. karate, taekwondo, aikido, and judo) or involve athletes using weapons (e.g., foil, epee, and sword; fencing) or their fists/feet (e.g., boxing and mixed martial arts). The training process in these disciplines is based on specific philosophy and a particular convention resulting from the long tradition of the regions where individual sports have evolved.

5. Aquatic boating sports (e.g., rowing, kayaking, and sailing) are those for which the training and competition environment is water. This discipline's characteristics are mastery of equipment (e.g., rowing boat, kayak, or boat/yacht) and coordinated work of athletes using oars, paddles, or sails to achieve the best possible outcomes. These are disciplines in which both precision and coordinated teamwork are essential.

6. Aquatic non-boating sports include mainly swimming and represent other 'water sports'. They are individual sports requiring specific, long-term, arduous training and performance in a water environment. They are characterized by the interaction between the athlete training in the water (pool) and the coach instructing them. Progress primarily depends on personal improvement and communication (relationship) between the two parties in this aquatic environment.

7. Cycling is the sport of riding a bicycle and has been classified as an individual discipline that mainly requires endurance training during long cycling routes outdoors. We are aware of indoor cycling and its possible differences from outdoor cycling. However, since we did not have any participants indicating indoor cycling, we did not list it as a sport in this study.

8. Track and field sports comprise a group of activities in which people compete, including running, jumping, throwing, and performing other technical skills. Athletes in these disciplines are usually individuals, although there are also team competitions within that sport discipline (e.g., relay races). However, the training process is usually conducted in large groups and only the fine-tuning of the details resulting from the specificity of the competition is conducted individually, usually at the elite level.

9. Strength and fitness sports include bodybuilding, cross fit, powerlifting, and various forms of fitness. They are defined by the ability to work against a resistance based on strength: the maximal force an individual can apply against a load. The training aims to improve muscle strength, including lifting weights or increasing the resistance against which the individual works.

10. Gymnastic sports include acrobatics, aerobics, and calisthenics. These sports involve performing systematic exercises, frequently with the use of different equipment or facilities (i.e., hoops, balls, skipping rope, rings, bars, and balance beam), either as a competitive sport (artistic or sports gymnastics) or to support improvements in strength, agility, coordination, and physical conditioning.

11. Dance sports represent all dance styles and pole dancing, which vary in their characteristics from the typical, abovementioned sports and are progressively being recognized as sports.

Research tools

The diagnostic survey was conducted using a validated structured questionnaire. This study used Lind's MCT [14] to measure the general moral competency level. Test included moral dilemmas where one concerned illegal behavior at work, while the second one referred to a medical dilemma (life-saving). Respondents were asked to evaluate how much they agree or disagree with the presented situations. According to the MCT's research protocol [14], students responded to twelve statements that were designed using a Likert scale where the range of answers was from totally disagree(-4) to totally agree(+4). Each of the abovementioned moral dilemmas had 12 statements: six for and six against the behavior described, corresponding to the phases of moral development (Kolhbergian model) [28]. The final score, called the C-index, is summarized using

an algorithm created and described by Lind [14], ranging from 1 to 100 points. It is believed that the final score represents one's ability to evaluate a given dilemma based on their individual level of moral competency and quality of personal development. Lind [14] believed that C-index can help to assess the degree to which a person dis(allows) other moral concerns and external influential factors mediated their judgements more than inner individual set of principles and moral standards. The smaller the C-index score, the lower the individual's moral competency level. Scores <19 points are considered a low to very low moral competency, scores of 19–29 points are considered a moderate moral competency, and scores >29 points are considered a high to very high moral competency.

The respondents' modes of involvement in sports were determined by asking them to indicate whether they have been involved in sport in an amateur or professional way, or not at all. This question was followed by another one asking the respondents for a number of years of engagement and for the particular sport.

Ethics

We declare the study was conducted according the Declaration of Helsinki regulations (revised version 2013). Study protocol has been approved by the Bioethics Committee of the University of Medical Sciences, Poznan (decision number: 893/18). All study participants were instructed on the purpose and study procedure beforehand, and that the participation was voluntary. They could also withdraw from the study at any time. All participants personally provided written informed consent. They were also informed about the confidentiality and anonymity of data collection and storage and that their contribution would be unidentifiable in its final forms (publications and reports).

Statistical analysis

Potential interaction effects between examined variables was analyzed with the use of ANOVA. This was followed by Student's t-test (due to the normality of the data distribution) for the differences between mean C-index scores in particular sports and modes of training (amateur vs professional). To assess the potential influence of years of involvement in sports on levels of moral competence both in amateur and professional sportspersons Pearson's correlation coefficient (r) was employed; and correlations with an $r < 0.4$ were considered weak, those with an r of 0.4–0.6 were considered moderate, and those with an $r > 0.6$ were considered strong [29]. Independent Pearson's correlations were compared using Fisher's z-test. For the purpose of the study a significance level of statistical analysis was set at p-value of <0.05. Analyses were performed with the use of Statistica software (Stat Soft 13.3, Krakow, Poland).

Results

ANOVA analysis between years of training and modes of training on C-index level indicated neither main effects nor significant interaction effects with $F(18, 935)=1.0391, p = 0.4119$. Whereas ANOVA analysis of effects between different sports and modes of training indicated statistically significant interaction effect on C-index level with $F(10, 952)=1.9787, p = 0.0325$.

This was followed by t-test analyses presented in tab. 1, which compares C-index scores among respondents representing different training modes (amateur and professional), both as a whole, by gender, and by the eleven sports.

Table 1 shows that C-index differed significantly between amateur and professional athletes for some sports groups, indicating differences in moral competence levels. In non-invasion games, the moral competency level was significantly higher for amateur than professional players ($p = 0.0416$). A similar situation was observed for martial arts and other fighting sports ($p = 0.0434$) and aquatic boating sports ($p = 0.0265$), where C-index were significantly higher for amateurs than professionals. However, the opposite was observed for dance sports, with professional dancers having higher moral competency levels than amateur dancers ($p = 0.0144$). Amateurs generally had higher moral competency levels than professionals in five sports categories (invasion games, non-invasion games, martial arts and other fighting sports, aquatic boating sports, cycling). The highest moral competency levels among amateurs were in aquatic

boating sports (mean $[M] = 19.9$), with a mean value indicating moderate moral competency. In contrast, amateurs had low moral competency in the other types of sports. Professionals had higher C-index for dance, aquatic non-boating sports, and strength and fitness sports (16.8–16.5), but all indicated low moral competency. The lowest C-index were observed for net/wall/racquet sports for amateurs ($M = 9.7$) and martial arts sports ($M = 10.3$), cycling ($M = 10.3$), and aquatic boating sports ($M=10.4$) for professionals, all indicating low moral competency.

To determine whether there were general differences between amateur and professional sports participants, we calculated mean C-index for all females and males engaged in sports and those not involved in sports. The mean C-index (ranging between 12.7 – 14.5) indicated low moral competency levels for the whole group.

To answer the research question on possible associations of moral competency levels with training experience and years of training, we calculated Pearson’s correlation coefficients between C-index and years of training for amateur and professional athletes for each type of sport, and compared them using Fisher’s z-test (Table 2).

Correlation analyses (Table 2) indicated one moderate positive correlation ($r = 0.43$). The correlation was noticed between the levels of moral competency (represented by C-index) and longevity of training involvement (represented by number of training years) for a professional group in aquatic boating sports (rowing, kayaking, and sailing), where the longer they trained, the higher their moral

Table 1. Comparative analysis of C-index scores (mean and SD) across sports and different training modes (amateur vs professional).

Types of sports	Amateurs		Professionals		Student’s t-test p value
	N	C-index	N	C-index	
1. Invasion games	217	14.5 ± 10.4	145	13.1 ± 9.7	0.2102
2. Non-invasion games	82	14.4 ± 10.2	48	10.8 ± 7.8	0.0416
3. Net/wall/racquet sports	25	9.7 ± 6.7	10	11.9 ± 7.8	0.3855
4. Martial arts and other fighting sports	54	13.7 ± 9.5	44	10.3 ± 6.0	0.0434
5. Aquatic boating sports (rowing, kayaking, and sailing)	10	19.9 ± 17.7	24	10.4 ± 6.6	0.0265
6. Aquatic non-boating sports	42	14.5 ± 10.7	40	16.6 ± 10.2	0.0357
7. Cycling	8	14.0 ± 10.9	3	10.3 ± 5.2	0.5987
8. Track and field sports	49	14.8 ± 12.3	39	15.9 ± 10.1	0.6476
9. Strength and fitness sports	27	14.1 ± 12.3	5	16.5 ± 9.2	0.6873
10. Gymnastic sports	23	14.9 ± 9.3	12	15.9 ± 11.4	0.7824
11. Dance sports	32	11.8 ± 7.6	35	16.8 ± 8.2	0.0144
Mean values for all	569	14.1 ± 10.3	405	13.4 ± 9.2	0.2291
Male athletes for all sports	320	13.8 ± 10.4	222	13.9 ± 9.2	0.9485
Female athletes for all sports	249	14.5 ± 10.4	183	12.7 ± 9.1	0.0611
Non-sports participants	62	12.2 ± 7.7			

Table 2. Comparison of Pearson’s correlation coefficients for years of training and C-index between amateur and professional athletes for each type of sport.

Types of sports	Amateurs			Professionals			Significance of differences between correlations
	N	Years of training	r	N	Years of training	r	p-value
1. Invasion games	217	6.9	-0.03	145	8.7	0.09	0.2673
2. Non-invasion games	82	5.8	-0.12	48	7.4	-0.03	0.6285
3. Net/wall/racquet sports	25	5.0	-0.06	10	10.1	0.33	0.3603
4. Martial arts and other fighting sports	54	5.7	-0.18	44	10.0	-0.05	0.5309
5. Aquatic boating sports (rowing, kayaking, and sailing)	10	4.2	-0.31	24	7.6	0.43	0.0838
6. Aquatic non-boating sports	42	6.6	-0.23	40	8.7	0.17	0.0809
7. Cycling	8	3.6	-0.34	3	8.6	-----	-----
8. Track and field sports	49	4.4	-0.03	39	7.2	-0.01	0.9286
9. Strength and fitness sports	27	3.3	0.04	5	7.0	-----	-----
10. Gymnastic sports	23	4.7	0.04	12	9.6	0.06	0.9605
11. Dance sports	32	7.8	-0.01	35	9.7	-0.14	0.6114
Correlations for all sports	569	6.0	-0.07	405	8.6	0.06	0.0462
Male athletes for all sports	320	6.4	0.01	222	8.8	0.06	0.4715
Female athletes for all sports	249	5.6	-0.19	183	8.3	0.03	0.0210

competency level was. However, the correlation did not differ significantly between amateurs and professionals in aquatic non-boating sports ($p = 0.0809$). A positive correlation approaching moderate was observed for professional athletes in net/wall/racquet sports ($r = 0.33$). Negative correlations approaching moderate were observed for amateurs in aquatic boating, aquatic non-boating, and cycling sports (r of -0.31 , -0.23 , and -0.34). However, the cycling and aquatic boating sports results should be interpreted cautiously since their small sample sizes might cause bias.

The correlations were weak for all other sports groups and did not support significant associations between the examined variables (years of training and C-index) for amateurs nor professionals. Notably, the correlation coefficients differed significantly between amateur and professional athletes when considering all sports ($p = 0.0462$). C-index and years of training were positively correlated in professional athletes ($r = 0.06$), but negatively correlated in amateur athletes ($r = -0.07$), although both correlations were weak. A similar trend was observed when comparing female amateur and professional athletes ($p = 0.0210$). In cycling as well as in strength and fitness sports, the numbers of professional athletes were too small to calculate the correlation coefficients reliably.

Discussion

Sports can play a crucial role in fostering the sound development (including moral growth) of young people as research [30] focused on the potential benefits and factors that can negatively impact their development showed. Our study on levels of moral competency across various sports partially supports the hypothesis that moral reasoning differs by the type of sports and the mode of involvement only to some extent. The only interaction effects mediating the levels of moral competency were noticed between different sports and modes of involvement (amateur/professional). We found no clear nor strong associations between years of training and moral competency levels. This outcome concerns both sports in general, and those types of sport that have been predetermined in our study. This finding shows that the moral competency levels change regardless of the type of sports discipline practiced accordingly to developmental processes of moral growth [17]. It is contrary to what Miller and Jarman [10] and others [31, 32] have suggested, that sports differ by their individual characteristics and values that they contain and transmit and therefore might impact one’s moral development differently. Our study does not support this and in this sense it forms a new perspective on that topic. It should be noted that the participants of a sport are

generally part of the whole society and, like others (nonathletes), they face similar social problems and everyday dilemmas daily. We believe that our results indicating that moral competency levels do not differ significantly across various sports or the studied groups (amateur/professional), may be partially explained by the research tool (MCT). This test has been generally designed to measure competency on the base of pre-determined two dilemmas from everyday life (work situation and life-saving medical dilemma), and as such were not specifically related to sport dilemmas. And although it is a universal assumption that the attitude to values and interhuman social relationships in sports should not differ from a life situation outside of sport, but perhaps using sport-related research tool on assessing the level of moral competency in sports could prove more differentiated results. For example, from the perspective of a sports referee, a good refereeing at an elite level of sport may be viewed as a combination of fairness in decision-making, accuracy of judgments, and consistency in actions [33, 34]. Conversely, a frequently observed phenomenon among athletes engaged in competitive sports is the rewarding of aggressive behaviors, even if they do not align with established social norms [35]. Furthermore, Webb [36] demonstrated that an increase in sport experiences among athletes leads to a shift in their previously held values towards those more oriented towards competition as their professionalism develops.

However, it should be noted that moral competencies and their development depend on various factors such as the environment and the moral atmosphere [37], type of sport [32], and nature of sport itself [38].

Nevertheless, Piaget [39] and Kohlberg [15] demonstrated much earlier that experiences gained via participation in sport may contribute to cognitive development, and consequently will result in better moral reasoning due to i.e., age, social encounters with adults, essentially with parents, but also coaches, other athletes (fellow players and opponents), and mates/friends character [40]. Therefore when analyzing C-index scores accordingly to the types of sports, we observed that they were higher in professional than amateur athletes for six types of sports. However, statistical significance was achieved only by four of those. Comparisons of C-index scores between amateur and professional athletes indicated significantly higher indices for amateurs in non-invasion games, martial arts and other fighting sports, aquatic boating sports, and for professionals in dance sports. Interestingly, most C-index scores in all groups indicated low moral competency (except for amateurs in aquatic boating sports). A broader understanding of the characteristics of the examined group might explain these findings [31, 32]. The

abovementioned types of sports are all individual sports except for volleyball (a non-invasion game). One of the possible reasons for our results may be that in individual sports, athletes are responsible for their own performance and are not as reliant on the performance of other team members [41, 42]. The lack of a strong relationship between the years of training or mode of training (amateur/professional) with moral competency level in the final analysis confirms our previous findings [5]. The study was conducted on a group of youth aged 15–17 years, but the similarities have been noticed.

The characteristics of a given sport need to be considered when analyzing differences between types of sports. The analysis of mean C-index in the entire study population indicated that they ranged from 12.7 points for female professional athletes to 14.5 points for female amateur athletes but were similar in professional (13.9 points) and amateur (13.8 points) male athletes. Perhaps the situation is that the professional athletes' main goal is to compete well but focus on winning. If winning becomes their priority, other potential outcomes are dropped down on their hierarchy of motivations [43]. Pursuing victory may alter moral values in sports, as shown by many previous studies [44, 42, 45]. Some previous studies [12, 42, 5] have shown that professional individual-sport athletes have a higher moral competency level than team-sports athletes [42]. However, in our study, this expectation is counterbalanced by higher C-index in amateur athletes for five types of sports (invasion games, non-invasion games, martial arts and other fighting sports, aquatic boating sports, and cycling), some of which are also team sports (three were statistically significant).

This study's correlation analyses indicated a moderate positive relationship between years of training and C-index scores only for professional athletes in aquatic boating sports: the longer they trained, the higher their C-index. However, their average level was lower than that of amateurs in the same type of sport. This finding might be explained by the quality of novice trainees in these aquatic boating sports. An exclusive and prestigious nature of rowing [46] or sailing they still have the greatest power in shaping the moral and social habitus [47]. As Beauchamp & Vardaman [48] claim the rowing clubs can be seen as a site for moral and social education.

Those who stay and practice for a professional career start with a lower level of moral competency than their peers, but gradually increase their levels over time, although still within the low moral competency category. This hypothesis is consistent with Shields and Bredemeier [16], who found that in some sports the relationship between years of sports involvement and the levels of moral reasoning in has been generally negative. This result might also

be explained by Webb's prior observation [36], which suggests that with an increased years of involvement in sport practice athletes start presenting more professional approach (and more winning oriented) and their core set of values start to change as well. Therefore, this finding is intriguing and calls for more in-depth study in the future.

The only other positive correlation, approaching moderate strength ($r = 0.33$), was observed for professional athletes in net/wall/racquet sports. However, C-index scores did not differ significantly between professionals and amateurs in this type of sport. No other significant correlations were observed among types of sports beyond the weak strength level. The negative correlations approaching moderate strength observed for amateurs in cycling ($r = -0.34$) and aquatic boating sports ($r = -0.31$) were likely due to their relatively small subsample sizes, while the negative correlation for amateurs in aquatic non-boating sports ($r = -0.23$) was achieved with a reasonable subsample size.

Our study's respondents were university students aged around 19-23 years, which needs to be considered since they were all generally involved in sport-related high education. However, they appeared similar to the other peer age groups. Studies (with the use of the same research tool MCT) have shown that the moral competency levels of students have generally declined in many areas, such as business [49], medicine [50], and nursing [51]. Another study on Czech nursing students by Bužkova and Sikorová [52] found that the mean C-index was 14.2 points. In contrast, the mean C-index was found to change with years of study for Polish nursing students, who scored 12.8 points at the beginning the first year of studying to drop to 11.4 points in the fourth year [51]. Samanci [53] found the average C-index of Turkish students of primary education was 16 points, and was the same as for biology students at the same Turkish university. Interestingly, a study on young Czechs who were not university students (mean age = 24.3 years) [54] found a low median value for the scores by C-index to be 15.7 points. These findings are consistent with our earlier finding of a mean C-index of 12.6 for university students taking PE and Sports majors [3]. A good explanation of the situation in this age group has been offered by Rest [55] who noticed that after earlier stable increase a plateau appears in terms of moral growth in the early adulthood. Indeed, more recent data confirms this statement [56, 30].

Sports, with their regulations and intrinsic values, might pretend to be similar to a model of society, which involves all sorts of interactions and behaviors (cognitive, social, moral, and physical) between all parties and agents, including those among members of the same team and towards opponents, and can be embroidered with a wide scope of emotions, and filtered through a broad range of

personal experiences [57]. It must be stressed that in sports, moral development and decision-making are generally influenced by various internal and external factors [17, 4]. In addition, participation modes may be a mediating factors in sports that could impact the patterns of individual moral development, as each sports and each sportsperson brings their own goals, principles, and values to the training process [16]. In this regard, some studies have indicated that professional competitions act as pivotal points at which moral choices most often occur to the individual sportsperson [58, 59]. Moreover, it is in the competitions when the athletes encounter stress (e.g., caused by physical contact and performing in front of crowds) and fatigue, which can act as drivers altering the levels of presenting of moral skills and behaviors in the heat of the real action [60, 61].

However, participation in sports alone does not lead to moral attitudes, judgments, and behaviors: it needs educational reinforcement [62]. Unfortunately, the traditional, universal set of values has been increasingly neglected, this process has become even more severe recently [63], supposedly also impacting all areas of sports [64, 65]. It is obvious that sport and real-life interact and penetrate each other space and thus it is impossible to avoid some social and cultural disturbances in human relationships, even at the universal social level. However, many indications show that sports can facilitate the moral development of youth [66, 67, 68] and thus becoming a socially valuable and highly demanded educational vehicle for transmitting moral values required for maintaining positive social interactions in the lifespan. Graupensparger, Jensen, and Evens [69] reported in their meta-analytic review that behaviors toward colleagues from one's team is moderately, but positively associated with behaviors of the same kind toward opponents. The opposite association was found in various studies on antisocial behaviors, where negative behaviors towards teammates were associated with similar behaviors towards opponents [11]. Interestingly, they also reported age as a moderator of social behaviors with a positive correlation in the adult population but a negative correlation in young athletes. However, some studies suggest that sport, specifically professional version, plays a crucial function in a dehumanization process of sports, and as such negatively influences the level of moral competency of those involved, athletes and coaches [58, 70] but can have disastrous consequences for the future of sport, and broader for social life in general.

Finally, it should be emphasized that our respondents showed a similarly low level of moral competency in life-concerning dilemmas to their peer-age group, regardless of their level of training and type of sport practiced. In our view, this may be attributed to the specific research tool used in this

study, which focuses only on dilemmas related to real-life and everyday problems rather than strictly on sport-related problems, a perception that could be more pronounced in this particular group.

Limitations and avenues for further research

To our knowledge, this is the first study examining associations between training modes, years of training, and moral competence levels across sports. Despite its limitations, it can provide a valuable initial assessment of the situation and become a valid foundation for further in-depth analyses. The cross-sectional nature of design, which despite a relatively large total sample size ($N = 974$), does not permit drawing cause-effect conclusions, could be considered a limitation of the study. In addition, our data collection based on the answers declared by university students may be subject to a bias. Two subgroups (type of sport) sizes were insufficient to perform a robust statistical analysis, and were omitted in the analysis process and skipped in the reporting. Some may find our division of types of sports somewhat arbitrary despite being based on a source-related review. However, we have found such typology convenient for this study's purpose. In the further studies more consideration should be given to education and sociocultural/socio-economic status and environmental influences that might affect the state of moral competency. This dependency needs to be analyzed separately in detail and in a multidirectional manner. Also, other types of study designs, e.g., longitudinal designs, could be valuable in testing hypotheses on the changing levels of moral competency in young people with long-term involvement in sports.

Conclusions

All these new findings and theoretical approaches should direct the attention of the educational authorities (and especially PE teachers), including sports education system boards (and sport coaches), towards more comprehensive and combined strategies aimed at fostering the development

of moral and social competencies during youth schooling and sporting processes.

The estimated moral competency level among the examined sport-related students (aged 19–23 years), measured using the standardized Lind's MCT, was generally similar to their age-matched peers from other countries as found in the relevant literature, and fell within the low-level category of competency. Differences (statistically significant) were noticed between training involvement modes and life-related moral competency levels. Amateurs had higher levels of moral competency than professionals in three types of sports (non-invasion games, martial arts and other fighting sports, aquatic boating sports). In contrast, professionals had higher moral competencies than amateurs in dance sports. No strong correlations were found between training modes. The only significant positive, moderate correlation between years of training and moral competency levels was found for the group of professional athletes in case of aquatic boating sports; the longer they trained, the higher their moral competency level was. However, it must be noted that the moral competency level of professional athletes from this type of sport (boating sport) was significantly lower than that of amateur athletes within the same sport. The correlation for professional athletes in net/wall/racquet sports approached moderate strength, and their moral competency level increased with years of practice.

Competing interests

We, the authors of this text, hereby declare that we have no conflict of interest related to any commercial or financial associations.

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