

Sport in Society

Cultures, Commerce, Media, Politics

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/fcss20>

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To cite this article: Ricardo T. Quinaud, Kauana Possamai, José Roberto Andrade do Nascimento Júnior, Carlos E. Gonçalves & Humberto M. Carvalho (2022): The positive impact of sports participation on life skills' development: a qualitative study with medical students, Sport in Society, DOI: [10.1080/17430437.2022.2033220](https://doi.org/10.1080/17430437.2022.2033220)

To link to this article: <https://doi.org/10.1080/17430437.2022.2033220>



Published online: 02 Feb 2022.



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The positive impact of sports participation on life skills' development: a qualitative study with medical students

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ABSTRACT

We aimed to explore life skills development among medical student-athletes who participated in a university basketball team. We conducted qualitative constructivist research based on the life skills approach. Medical students from the college basketball team were interviewed in-depth. Using inductive thematic analysis, two independent researchers generated codes and themes. Methodological integrity and self-reflection process were carefully followed. Our analyses revealed that the medical students involved as athletes in college basketball were likely to perceive life skills development to contribute to their future medical careers. Several life skills were mentioned, such as time management, leadership, teamwork, learning improvement and mental performance. The coach was the one mentioned as the essential agent in developing life skills. This study highlighted how a rational and responsible commitment to sports could contribute to developing life skills that might be transferable to a future medical career.

KEYWORDS

Life skills; sport; thematic analysis; higher education

Introduction

Life skills development through sports has become of great interest recently (Williams et al. 2020). However, the main focus has been on youth athletes (Camiré and Santos 2019; Hermens et al. 2017; Mossman and Cronin 2019; Williams et al. 2020), with few studies on adults (Chinkov and Holt 2016; Holt et al. 2009). Life skills have been defined as 'those internal personal assets, characteristics, and skills such as goal setting, emotional control, self-esteem, and hard work ethic that can be facilitated or developed in sport and transferred for use in non-sport settings' (Gould and Carson 2008, 60).

Participation in sports programs may enhance the acquisition or improvement of these personal assets due to the development of physical, emotional, psychological and social aspects, which can be transferred to different areas of life, such as work, school and family (Gould and Carson 2008). In addition, the sports context provides opportunities for engagement in activities that contribute to developing the personal qualities that can be translated

as life skills outside sport (Martinek and Ruiz 2005). However, sports by itself does not positively influence peoples' development, but there is a need for an appropriate context, mediated and conducted by qualified coaches and structured intervention (Holt 2008; Pierce et al. 2018). Research in life skills development with adult athletes has also suggested the necessity to create a positive atmosphere for learning life skills by providing interaction between key social agents (e.g. peers and coaches) (Pierce, Gould, and Camiré 2017).

Recent research has proposed a model of life skills transfer from sport to other life domains (Pierce, Gould, and Camiré 2017). This model suggests a holistic and interactive process between the individual, learning environment (e.g. sports context), external assets (e.g. coach), transfer context (e.g. workplace) and the ongoing process of interactions to produce life skills transfer outcomes. Based on that, it is understood that some life skills learned in the sports context are transferable to other contexts, such as professional, interpersonal relationships, time organization, leadership and issues related to stress and anxiety (Draper et al. 2012; Hardcastle et al. 2015; Holt 2008).

Life skills transfer has been linked to several factors, such as program objectives and strategies (Turnnidge, Côté, and Hancock 2014). Additionally, it depends on factors related to individual characteristics, such as age and understanding of the concepts of values, skills and abilities (Camiré, Trudel, and Forneris 2012). Further, life skills seem to influence the quality of life of university students, positively helping to solve daily problems and personal satisfaction (AhmadiGatab et al. 2011).

One of the most stressful courses during academic education is Medicine (Radcliffe and Lester 2003), since the accumulation of credit hours and tasks, lack of time for leisure and often few hours of sleep cause a lot of physical and emotional stress (Gazzaz et al. 2018). These feelings may contribute to the emergence of mental illnesses and increased stress levels (Dyrbye, Thomas, and Shanafelt 2005). Additionally, in this period of medical training, medical students are focused on acquiring the qualification, competencies, and skills needed in a medical career (Dannefer et al. 2005; Newble 1992; Radcliffe and Lester 2003; Wass et al. 2001), such as interpersonal and intrapersonal skills.

Considering the factors influencing medical students' lifestyles (Webb et al. 1998), it is necessary to find ways to foster medical students' development, allowing them to be better qualified for a future job and healthy at the end of their medical training. It has been noted that the practice of sport, which is an ally in stress relief, prevention of mental illnesses and improvement in organization and time management, may have a positive influence on the academic development and quality of life of medical students (Amos et al. 2018; Urlings-Strop, Themmen, and Stegers-Jager 2017). University athletes present these improvements in the combination of educational and sports careers (Aquilina 2013). The student-athletes dual-career is defined as a career with a significant focus on both sport and academic studies (Stambulova and Wylleman 2015). Although there are challenges when combining a dual career in higher education (Condello et al. 2019), the beneficial contributions are view as a long-term investment, especially at the end of the sports career and the transition to the labour market (Stambulova, Ryba, and Henriksen 2021). Also, considering the development of a dual-career from an ecological perspective, student-athletes positively develop their career by the support interactions with peers, coaches, professors, family and other support providers from different environments' levels (Henriksen et al. 2020).

To our best knowledge, limited data deals with the potential influence of sport on the medical student's academic and social life. Therefore, this study aimed to explore life skills

development among medical student-athletes who participated in a university basketball team. In addition, we expect to contribute to the literature of dual-career by providing data from medical student-athletes (dual-career) on how sport contributes to medical training.

Methods

Research design

We adopted a constructivist approach in this qualitative study, which offers several strengths, such as flexible data collection and interpretation strategies that emphasize the co-construction of knowledge between the researchers and the participants (Creswell 2007). The constructivist approach enabled the researchers to develop a concept of dual career, providing an understanding of the subjective meanings that correspond to participants' experiences. We used qualitative research as an exploratory approach. The study was approved by the lead author's institutional ethics committee. All participants gave their informed consent after we provided detailed information about the nature of the study, that participation was voluntary and that they could withdraw from the study at any time. We gave pseudonyms to each participant to ensure the confidentiality of the results. Given the complexity and comprehensiveness of the life skills transfer model, it is assumed that the model was not designed to be tested in its entirety (Pierce, Gould, and Camiré 2017). We focused on the sport learning context, psychosocial skills (interpersonal and intrapersonal) and external assets.

Participants' recruitment and sampling

The sample included ten female medical student-athletes who were engaged in the basketball team of the School of Medical Sciences, University of Campinas, Brazil (Table 1). Participants were chosen through the following criteria: being a medical student (1), training at least three times per week with the School of Medical Sciences basketball team (2), and competing in the university medical championships (3). The lead researcher contacted participants that met all criteria and accepted participating in the study. Since the participants were students from the University of Campinas, a tuition-free public university, no player received a scholarship or was obligated to be part of the team. Hence, students' participation in the school basketball team was voluntary. Thus, the participants were amateurs' athletes. Team activities included year-round academic participation with three times per week (90 min

Table 1. Participants' characteristics.

Pseudonymous	Age (year)	Training experience (year)	School year	Play other sport	Played other sport	Played basketball before college
Ana	21	2.0	2	No	No	No
Olivia	19	6.0	1	No	Yes	Yes
Amelia	24	3.0	5	Yes	No	No
Emily	22	5.0	3	Yes	Yes	Yes
Sophie	20	1.0	1	No	No	No
Emma	24	4.0	4	No	Yes	No
Susan	22	4.0	4	No	Yes	No
Sarah	23	2.5	3	No	No	Yes
Julia	26	1.0	1	No	No	No
Kate	18	3.0	1	No	Yes	Yes

per training sessions, typically scheduled at 9:00 pm) and participation in the university medical championships in April (school year starts in February/March), tournaments and competition within the university, totalling about 20 games per year.

Data collection

Researchers

Researchers are a crucial instrument in qualitative investigations. The lead researcher designed the experiments, conducted the interviews and reviewed drafts of the article. The first and the second author conducted the data analysis separately, prepared the written article and reviewed drafts of the article. To improve our interpretation, we invited two more authors to act as our critical friends during the entire process. The critical friend provided a critical dialogue between the researchers, offering critical feedback and improving critical thinking (Smith and McGannon 2018).

Interviews

To gain extensive knowledge about individual experiences and perspectives on the given set of issues, we took in-depth interviews as the best-suited tool to achieve the study goals following recommended steps to report the data (Dicicco-Bloom and Crabtree 2006). The lead researcher conducted interviews in the gym before practice one-on-one and audio-recorded to further transcription and analysis. Each interview included a brief explanation of the research, assurance of confidentiality and participants' right to withdraw at any time. We developed the semi-structured interview based on the life skills transfer model (Pierce, Gould, and Camiré 2017) and the holistic ecological approach to sport and study (Henriksen et al. 2020).

The interview started with a general question about the participants' daily activities (e.g. could you describe your daily activities?). The interview guideline comprised questions about the students' general information (e.g. 'How long have you been playing basketball?'; 'When and why did you join the team?'), social aspects (e.g. 'How do you get on with your teammates?'; 'Have you made any strong friendships in the team?'; 'How would you describe the social aspects of being in the basketball team?'; 'How does being in the basketball team affect your life, if affect?'), feelings of competence (e.g. 'Are you happy being in the basketball team? Why?'; 'Do you feel that being in the basketball team contribute to your life? Please, explain how?'), improvement (e.g. 'Does being in the basketball team have changed you? In which way?'; 'How do you feel that changes in your life will affect your future work?') and challenges (e.g. 'What are the main challenges that you have to deal with to maintain your commitment to basketball and study and how do you deal with them?'; 'What are your plans or goals for the future, related to your sport and study?'), and how they dealt with them. However, we did not strictly follow the interview guideline. Other questions appeared during the interview, based on the students' responses, and all the students were allowed to express their opinions freely. The interview guide was developed and submitted to a panel of three experts for revision and validation. After considering the experts' panel suggestions for modifications, we conducted a single interview with a student who was not based on the sample criteria but had similar characteristics, including being a higher education student and playing and engaged in a university sport. This interview helped verify if the interview guide was

appropriated to our study aim. After checking its usefulness, we considered the interview guide suitable for conducting the interviews with the target sample (Levitt et al. 2017).

Data processing and analysis

The interviews were audio-recorded and transcribed verbatim by the second author. Transcripts were given back to interviewees, so they could confirm, add, exclude or even modify their statements. The interviews lasted between 32 and 65 min, and the transcription comprised 98 pages with a single space in Microsoft Word 2013. Transcripts were uploaded to QSR International Pty Ltd 2011, NVivo (Version 9.2, <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home>) to facilitate the analysis process. We analysed the data using thematic analysis (Braun and Clarke 2019). The first two authors did the thematic analysis' phases separately. The transcripts and listening to audio-recorded were considered read and listen to several times to provide the familiarization of the interviews. Then the generation of initial coding was performed, which was revised to contemplate the readjustments. After generating an initial coding, we began to deepen the interpretation of the coded data. We performed a detailed search for topics that could be extracted and grouped by similarity of the information (contexts). Then, it followed the process of generating themes. The re-reading of the statements of each coding was carried out separately for the initial generating of the congruent and pertinent themes. Then, another reading was performed to define the themes and generate the sub-themes. After finishing the coding and categorization stages, the thematic review stage started, where statements were re-read for confirmation within the themes, considering the need to readjust or exclude until saturation was reached. After achieving consensus between researchers with the themes, definitions and naming within each theme were established. Furthermore, we verified the relevance of each statement according to the study aims. Participants' statements were semantic and contextually translated to English.

Methodological integrity

To ensure the trustworthiness of this study, the authors followed the recommendations for designing and reporting standards for qualitative research (Levitt et al. 2018, 2017). Fidelity to the subject matter and utility in achieving research goals were the focus of the entire research process (Levitt et al. 2018). Additionally, the researchers did an ongoing self-reflection process to give a clear and trustable find in the medical education field, increasing the study's credibility and confirmability (Shenton 2004).

Results

The themes' hierarchical structure is shown in [Figure 1](#). Our analyses revealed that the medical students involved as athletes in college basketball were likely to perceive how it can contribute to their lives positively. The theme that emerged from the participants' statements was student-athlete, representing the combined activities of the educational and sport context they were in and their identities. Directly related to this theme, the sport context represents a category that the participants most mentioned as being significantly necessary

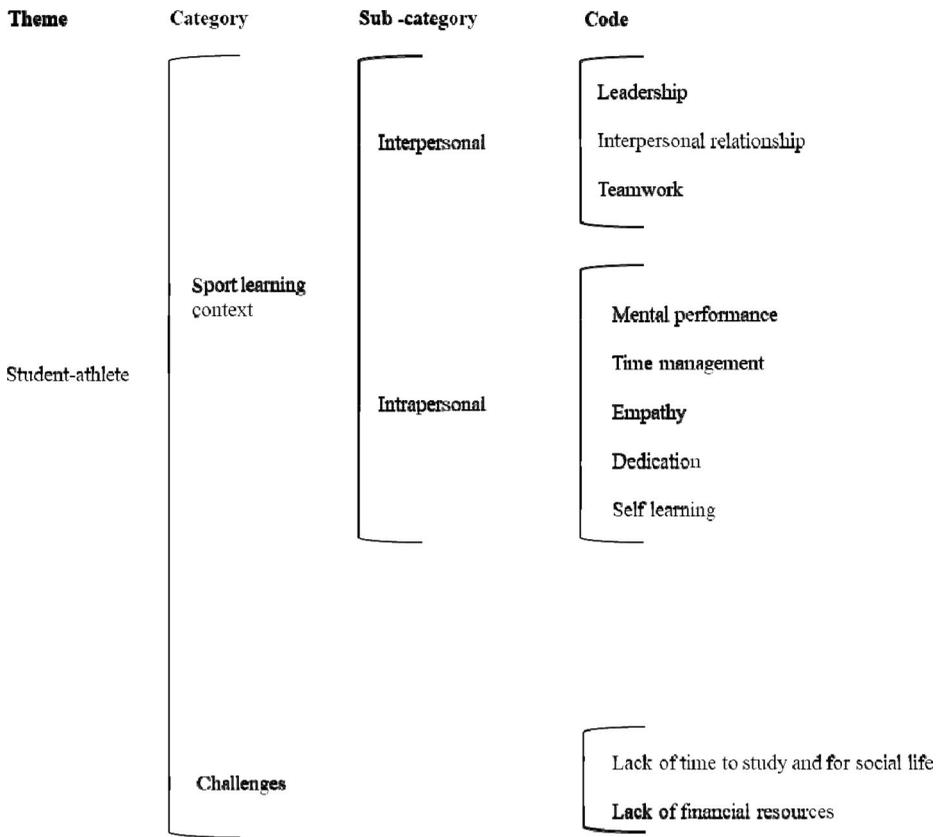


Figure 1. Themes' hierarchical structure.

to their lives as medical students. In the sport context category, two subcategories emerged, interpersonal and intrapersonal. Each subcategory is a perception of how the sport context influenced the participants, and codes represent the influence of the subcategories in their lives.

The participants mentioned the sports coach as a critical external asset, followed by the other participants. Lastly, the challenges emerged as a category because they were directly related to the condition of being a student-athlete and not belonging to the exclusivity of a context. Also, statements were clear on the link between the challenges and their influence on the participants' lives. Therefore, this category was generated to represent the most difficult challenges stated by the participants.

The sports learning context

The sports context seemed to significantly influence the participants' interpersonal and intrapersonal psychosocial life skills. The codes related to interpersonal skills were leadership, interpersonal relations and teamwork. The participants stated that due to combination of both commitments (sport and study), the dual-career contributed to an essential

professional competence in the medical career, which students in a dual-career admitted to feeling easier to assume leadership roles because:

as a team, everyone has a leadership role at some point. You need to respect those who know more than and need to be open. I think that it is important in the team and my future career as a doctor (Emma).

Amelia shares a similar statement but related to interpersonal relationships code: 'I learned to deal with older and younger people and people closer or less close to me. Sometimes, I do not like someone, but I learned to deal with them to help the team.' Teamwork was also coded in the interpersonal skills subcategory. This life skill was mentioned as bringing people together, even if they are different from each other: 'Sport allowed me to improve myself and see other people improving together. We must be all together, even though we have different levels. We try to help and improve [...] I find it is very positive' (Kate). The interviewed students make use of the sport context as a similar context for their future professional life and discover the need to deal with different people in the workplace, as mentioned by Emily:

Doctors work a lot in surgery, and they need to have a work team. In the game, we have our friends, our team. But, at the same time that we work together, sometimes it goes wrong, sometimes it goes right. So, we need to learn teamwork. We need to listen to constructivist criticism and at the same time encourage our colleagues.

We coded intrapersonal subcategories, including mental performance, time management, dedication and self-learning. Being welcomed by older girls on the team and being exposed to dealing with sports and educational commitments allowed empathy between them. Sophie commented:

I stayed in the team because of her. She taught me everything, and now I need to teach the freshmen girls to [...] teach commitment, responsibility and that the training is important for them". Julia also confirms: "My main goal is to be the best I can be in my last year of college, so I can teach the freshmen girls the things I know.

Sports participation was mentioned as a way to improve the participants' mental performance. For example, Julia declared the influence of playing the sport on her psychological performance, and Sophie stated her satisfaction in playing sport in college:

After training, I feel very good. It makes me strong. Sometimes, when I am sad, training makes me improve my thoughts, it helps my psychological. (Julia)

[...] being in the team was the best choice I made in college to help me with psychological challenges. (Sophie)

Another code related to this subcategory was time management in the present and, potentially, in the future life:

We have too many credits, but I think that my time management is improving over time, and it will help me in my professional life. (Sarah)

Lastly, intrapersonal skills also emerged from the participants' statements as dedication and self-learning. Participants stated that sport context contributes to their dedication and commitments to give the best of themselves:

It helps me to be the best at what I do. The fact that you want to win, you want to be the best [...] I think it is a good thing in our lives and I will take it to the hospital. I want to be the person who does the best. If there are two doctors, the patient will choose the best one. (Emily)

Additionally, participants went beyond the relationship between them and the sport context. They added a relationship to the educational context, and the involvement with the sport context represents a valuable tool to improve their learning:

[...] in the moment that you understand that in these two hours of training, you are not wasting two hours, but you are optimizing your time better and helping you to think and study better. (Julia)

Sports coach

Overall, the observations reflect the positive medical student-athletes statements about their coach reflect their perceptions of the motivational climate. For Ana, the coach is 'a friend to the girls.' Probably, being a friend and close to them is what Amelia feels when she states:

He inspires me. Basketball is not just kicking the ball. He shows how far we can go to achieve our goals if we give out best.

Sophie shares similar thoughts about the importance of their coach:

He knows the strength and weakness of each one of us. He works on our weakness and improves our strength as well as he makes us work as a real team.

Due to several commitments, Sarah almost gave up, but the coach 'was the reason to decide to keep training.'

Challenges

The challenges of maintaining dual commitments were consensual among participants. However, the most emphasized challenge was the lack of time due to several activities inside and outside the school:

I think it is time, for me, it is the time because I do many things inside and outside the school" (Julia). Also, due to lack of time, participants did not consider the dual-career as beneficial to them: "Time is the most challenging thing. There are some days that the training is not pleasant and starts to be an appointment that I do not want to be there. (Ana)

Another stated challenge was the lack of financial resources allowing them to play the games outside their institution:

I think that we do not play enough games due to our financial limitations. We cannot afford to pay for these games alone as well as the transportation to the games. (Amelia)

Discussion

To the best of our knowledge, this is the first study to examine medical students and the influence of their sports career on their medical training based on life skills development. Young adults enrolled in medical training are probably more prone to make distinctions

and critical reflections of their life skills learned than children and adolescents. Thus, when considering the statements of the medical student-athletes in the present sample, we assume that they are reliable respondents. Participants described their stories as student-athletes at a medical college and how it influences their present and future lives. Sport context, sports coach, and challenges to combining a dual-career are presented as the critical factors in their life skills development.

According to Pierce, Gould, and Camiré (2017) and Henriksen et al. (2020), a holistic and interactive process between the individual and the specific ecology is key in interpreting participation outcomes. Based on this study results, we can observe that the sport learning context significantly influences the participants' life skills development. Furthermore, the interaction between the individual learner (e.g. the athlete), sports demands and coaching characteristics in a social-cultural dual-career environment may contribute to life skills development (Pierce, Gould, and Camiré 2017).

The study of life skill development through sport has received increased attention (Williams et al. 2020) and the study of student-athletes (Stambulova, Ryba, and Henriksen 2021). Additionally, sports participation has been noted as a valuable contribution to the development of a medical student (Olmesdahl 1999). In this study, the participants presented different perceptions and examples of how the sports environment develops life skills. Based on the findings, the sport learning context may help medical students develop psychosocial skills and have an advanced experience compared to their peers not experiencing the sport learning context. The sports learning context will not automatically help medical students in developing psychosocial skills. However, the interactions between the individual learner, peers, coach, sports program and various other factors in the sport learning context might facilitate life skills development (Gould and Carson 2008; Holt et al. 2009). Besides being in the centre of a dual-career environment, student-athletes are influenced by support providers contributing to their development in both careers (Henriksen et al. 2020). It might explain why companies target former student-athletes when hiring employees due to the skills learned in a dual-career (Chalfin et al. 2015). Additionally, Wood (2017) presented several life skills possessed by the student-athletes that were transferable outside sports, such as teamwork, time management and mental toughness.

Previous researches on medical literature have shown that the sport learning context can contribute to developing interpersonal and intrapersonal psychosocial skills in several ways and transfer to professional context (e.g. the transfer context) (Amos et al. 2018; Breitbach, Reeves, and Fletcher 2017; Church, Rumbold, and Sandars 2017; Church et al. 2017). Medical literature does often not use the life skills transfer model. However, medical context is suitable to psychosocial skills transfer once the medical context presents similarities to the sports context (e.g. the necessity to work with other people, good communication and stressful situations), provide opportunities to use those skills learned, look for people with positive skills and values people with such skills (Förtsch et al. 2018).

Health professionals in an international conference have already demonstrated their thoughts on how teamwork and collaboration principles in organized athletics can influence inter-professional healthcare practice (Breitbach, Reeves, and Fletcher 2017). Medical articles addressed the importance of the medical community working as a 'team sport' (Bourgeois-Law, Teunissen, and Regehr 2018; Haramati 2015; Stillman 2013) to get involved in a harmonious atmosphere. Also, individual internal assets can influence life skills learning and transferring (Gould and Carson 2008). Medical students are more motivated by

pursuing future goals than other undergraduate students (Mattick, Dennis, and Bligh 2004), and student-athletes present high levels of perceived competence (De Brandt et al. 2018). Considering that medical student-athletes present both characteristics, their development of psychosocial skills might be increased.

The use of sport as a similar context for the participants' future professional life is helpful to increase awareness of cognitive strategies (Bond et al. 2004). According to Southwick et al. (2014), the simple use of similar athletic terms improved performance and satisfaction in medical teams. Furthermore, the involvement in the sports context (e.g. competition and training sessions) contributes to developing robust and effective wellness programs to help students in very stressful learning environments (Ghudasara et al. 2011). Also, it may potentially create learning communities for students, which has a significant impact on the lives of medical students (Smith et al. 2014). This stressful situation can be helpful for medical students, challenging them positively (Rudland, Golding, and Wilkinson 2020). In addition to the positive influence on life skills development of the sport learning context, medical students that are physically active (e.g. athlete) report good general and mental health (Dyrbye et al. 2019; Kotter et al. 2016), reduced risk of burnout, increased quality of life (Dyrbye, Satele, and Shanafelt 2017) and a more positive mood and academic performance (Al-Drees et al. 2016).

The results in this study highlighted the relevance of the sports coach on participants' life skills development. Participants stated that their sports coach was the one that helped them improving psychosocial skills, which they can apply in other contexts outside of sport. It has been noted that the sports coach is the primary external asset to promote life skills development (Gould et al. 2007; Pierce, Gould, and Camiré 2017) and play a crucial role in the way that life skills are transferable outside of sport in youth athletes (Sackett, Sarah, and Lori Gano-Overway 2017; Camiré, Trudel, and Forneris 2012). Based on the participants' statement, it seems that sports coaches also have great importance on young adults' life skills development. However, we did not interview the sports coach to know his philosophy and strategies (Camiré, Trudel, and Forneris 2012) or adopt a more implicit or explicit approach (Bean et al. 2018).

Challenges to dual-career, such as lack of time and financial resources, were highlighted in the results of this study. Medical students have reported these challenges in previous studies (Gazzaz et al. 2018; Wray and McCall 2007), and, with medical student-athletes, this does not seem to be any different. This challenge might be reported mainly by the students who want to pursue a sports career (Ryba et al. 2017). Freshman students (e.g. Julia) are the ones who feel most of this challenge due to the transition from high school to medical school (Radcliffe and Lester 2003). Although it is an initial challenge, the students in this study reported an improvement in their organization and time management during the school years mainly due to the conditions that the sports career provided (e.g. Sarah). It is essential to mention that the challenge of combining a dual-career refers to the barrier that student-athletes face, such as lack of time and lack of financial resources (Subijana, Barriopedro, and Conde 2015).

On the other hand, challenging medical athletes (the individual learner) in the sport learning context refers to testing their abilities to overcome unexpected activities or events, which is a required factor for positive growth (Roth and Brooks-Gunn 2016). In addition, the life skills transfer model implies that skill learning in challenging sports environments is more likely to transfer to similar challenging work environments (Pierce, Gould, and

Camiré 2017). However, combining a dual-career also facilitates the transfer of skills learned to other environments (Park, Lavalée, and Tod 2013).

Participants' life skills development in this study was consistent with previous observations with youth athletes (Goudas and Giannoudis 2008). The positive effects of the sports context and sports participation on youth athletes were also perceived by young adults (Holt et al. 2009), highlighting the importance of this learning context in developing life skills and the transference as positive outcomes (Subijana et al. 2020). Also, sports coaches were suggested as significant external assets in promoting athletes' life skills development (Gould et al. 2007; Pierce, Gould, and Camiré 2017). The present observations highlight the original perceptions for developing life skills through sports in youth adults. Given the emphasis of research on youth athletes, life skills are often considered in transfers to educational or family contexts. However, we may perceive a possible life skill transfer to the workplace and professional development considering young adults.

Thus, our findings and the existing literature show that the influence of the sport learning context on medical students will likely offer opportunities to develop life skills transferable to a medical career. Furthermore, students need good social support to help them deal with the challenges imposed by their commitments.

Limitations and future research

This study used a single information resource (students) and all students from the same college. Although it is a limitation, students' statements are the focus and primary sources of this investigation, but taking students from other colleges would increase the results. Another limitation was the lack of information about the sports coach, which could help understand strategies of life skills development in young adults. Thus, future research can make a prospective study project to collect longitudinal data from medical students and people around them (e.g. professors, coaches, parents and peers). However, considering this study is a cross-sectional design, we cannot confirm if the skills learned in the sport learning context were transferred to the medical workplace. Also, this study was based on a sample of amateur-level athletes. Hence, our data is limited to the most frequent discussions on dual-career student-athletes, mainly based on high-level athletes. Nevertheless, the number of student-athletes involved in high-level competition is very small compared to student-athletes involved in amateur level sports. Hence, the present data and discussion contribute by reflecting on sport commitment and its influence on students' lives. Furthermore, this study indicates that complementary contexts with the sports context contribute to medical students' being more prepared for their medical careers. Therefore, we suggest that higher education stockholders and managers consider implementing a sports program or strategies that foster their students' sports participation.

Conclusion

Medical student-athletes reported life skills development in the sport context, even with an excessive workload dedicated to studying. This research suggests opportunities for medical students to be better prepared for their future profession. We do not suggest that medical students need to be athletes or pursue a sports career to benefit from the sports context. Nevertheless, our sample was composed of amateurs' athletes, a larger population in higher

education but with scarce information available. Based on the study results, the students would benefit from considering a rational and responsible commitment to sports practice. Sports coaches are also a critical point in this process. Thus, coaches need to be well prepared to improve students' sports performance and improve students' social, professional and individual competencies.

Disclosure statement

No conflict of interest by the authors.

Funding

RTQ was supported by a grant from the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brazil (CAPES) – Finance code 001. KP was supported by a grant from the Conselho Nacional de Desenvolvimento Científico e Tecnológico – Brazil (CNPq)

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References

- AhmadiGatab, T., N. Shayan, R. M. Tazangi, and M. Taheri. 2011. "Students' Life Quality Prediction Based on Life Skills." *Procedia - Social and Behavioral Sciences* 30: 1980–1982. doi:10.1016/j.sbspro.2011.10.384.
- Al-Drees, A., H. Abdulghani, M. Irshad, A. A. Baqays, A. A. Al-Zhrani, S. A. Alshammari, and N. I. Alturki. 2016. "Physical Activity and Academic Achievement among the Medical Students: A Cross-Sectional Study." *Medical Teacher* 38 (1): S66–S72. doi:10.3109/0142159X.2016.1142516.
- Amos, H., C. Broome, C. Watson, and M. Bradley. 2018. "Heads Up: Could Sport Psychology Be Used to Aide Medical Training?" *Medical Teacher* 40 (7): 755–756. doi:10.1080/0142159X.2018.1439574.
- Aquilina, D. 2013. "A Study of the Relationship between Elite Athletes' Educational Development and Sporting Performance." *The International Journal of the History of Sport* 30 (4): 374–392. doi:10.1080/09523367.2013.765723.
- Bean, C., S. Kramers, T. Forneris, and M. Camire. 2018. "The Implicit/Explicit Continuum of Life Skills Development and Transfer." *Quest* 70 (4): 456–470. doi:10.1080/00336297.2018.1451348.
- Bond, W., L. Deitrick, D. Arnold, M. Kostenbader, G. Barr, S. Kimmel, and C.s Worrilow. 2004. "Using Simulation to Instruct Emergency Medicine Residents in Cognitive Forcing Strategies." *Academic Medicine: Journal of the Association of American Medical Colleges* 79 (5): 438–446. doi:10.1097/00001888-200405000-00014.
- Bourgeois-Law, G., P. W. Teunissen, and G. Regehr. 2018. "Remediation in Practicing Physicians: Current and Alternative Conceptualizations." *Academic Medicine: Journal of the Association of American Medical Colleges* 93 (11): 1638–1644. doi:10.1097/acm.0000000000002266.
- Braun, V., and V. Clarke. 2019. "Reflecting on Reflexive Thematic Analysis." *Qualitative Research in Sport, Exercise and Health* 11 (4): 589–597. doi:10.1080/2159676X.2019.1628806.
- Breitbach, A. P., S. Reeves, and S. N. Fletcher. 2017. "Health Care as a Team Sport?-Studying Athletics to Improve Interprofessional Collaboration." *Sports* 5 (3): 62. doi:10.3390/sports5030062.

- Camiré, M., and F. Santos. 2019. "Promoting Positive Youth Development and Life Skills in Youth Sport: Challenges and Opportunities Amidst Increased Professionalization." *Journal of Sport Pedagogy Research* 5 (1): 27–34.
- Camiré, M., P. Trudel, and T. Forneris. 2012. "Coaching and Transferring Life Skills: Philosophies and Strategies Used by Model High School Coaches." *The Sport Psychologist* 26 (2): 243–260. doi:10.1123/tsp.26.2.243.
- Chalfin, P., E. Weight, B. Osborne, and S. Johnson. 2015. "The Value of Intercollegiate Athletics Participation from the Perspective of Employers Who Target Athletes." *Journal of Issues in Intercollegiate Athletics* 8: 1–27.
- Chinkov, A., and N. Holt. 2016. "Implicit Transfer of Life Skills through Participation in Brazilian Jiu-Jitsu." *Journal of Applied Sport Psychology* 28 (2): 139–153. doi:10.1080/10413200.2015.1086447.
- Church, H., D. Murdoch-Eaton, R. Patel, and J. Sandars. 2017. "What Can Medical Educators Learn from the Rio 2016 Olympic Games?" *Medical Teacher* 39 (6): 665–666. doi:10.1080/01421519x.2016.1270440.
- Church, H. R., J. L. Rumbold, and J. Sandars. 2017. "Applying Sport Psychology to Improve Clinical Performance." *Medical Teacher* 39 (12): 1205–1213. doi:10.1080/0142159x.2017.1359523.
- Condello, G., L. Capranica, M. Doupona, K. Varga, and V. Burk. 2019. "Dual-Career through the Elite University Student-Athletes' Lenses: The International FISU-EAS Survey." *PLoS One* 14 (10): e0223278. doi:10.1371/journal.pone.0223278.
- Creswell, J. W. 2007. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. 2nd ed. London: SAGE.
- Dannefer, E. F., L. C. Henson, S. B. Bierer, T. A. Grady-Weliky, S. Meldrum, A. C. Nofziger, C. Barclay, and R. M. Epstein. 2005. "Peer Assessment of Professional Competence." *Medical Education* 39 (7): 713–722. doi:10.1111/j.1365-2929.2005.02193.x.
- De Brandt, K., P. Wylleman, M. Torregrossa, N. Schipper-Van Veldhoven, D. Minelli, S. Defruyt, and P. De Knop. 2018. "Exploring the Factor Structure of the Dual Career Competency Questionnaire for Athletes in European Pupil- and Student-Athletes." *International Journal of Sport and Exercise Psychology* 1–18. doi:10.1080/1612197X.2018.1511619.
- Dicicco-Bloom, B., and B. F. Crabtree. 2006. "The Qualitative Research Interview." *Medical Education* 40 (4): 314–321. doi:10.1111/j.1365-2929.2006.02418.x.
- Draper, C. E., J. Forbes, G. Taylor, and M. I. Lambert. 2012. "Empowering Professional Soccer Players in South Africa: Evaluation of Project Ithuseng." *International Journal of Sports Science & Coaching* 7 (3): 579–591. doi:10.1260/1747-9541.7.3.579.
- Dyrbye, L., D. Satele, and T. Shanafelt. 2017. "Healthy Exercise Habits Are Associated with Lower Risk of Burnout and Higher Quality of Life among U.S. Medical Students." *Academic Medicine* 92 (7): 1006–1011. doi:10.1097/acm.0000000000001540.
- Dyrbye, L. N., A. F. Sciolla, M. Dekhtyar, S. Rajasekaran, J. A. Allgood, M. Rea, A. P. Knight, A. Haywood, S. Smith, and M. B. Stephens. 2019. "Medical School Strategies to Address Student Well-Being: A National Survey." *Academic Medicine: Journal of the Association of American Medical Colleges* 94 (6): 861–868. doi:10.1097/acm.0000000000002611.
- Dyrbye, L., M. Thomas, and T. Shanafelt. 2005. "Medical Student Distress: Causes, Consequences, and Proposed Solutions." *Mayo Clinic Proceedings* 80 (12): 1613–1622. doi:10.4065/80.12.1613.
- Förtsch, C., D. Sommerhoff, F. Fischer, M. Fischer, R. Girwidz, A. Obersteiner, K. Reiss, et al. 2018. "Systematizing Professional Knowledge of Medical Doctors and Teachers: Development of an Interdisciplinary Framework in the Context of Diagnostic Competences." *Education Sciences* 8 (4): 207. doi:10.3390/educsci8040.
- Gazzaz, Z. J., M. Baig, B. S. M. Al Alhendi, M. M. O. Al Suliman, A. S. Al Alhendi, M. S. H. Al-Grad, and M. A. A. Qurayshah. 2018. "Perceived Stress, Reasons for and Sources of Stress among Medical Students at Rabigh Medical College, King Abdulaziz University, Jeddah, Saudi Arabia." *BMC Medical Education* 18 (1): 29. doi:10.1186/s12909-018-1133-2.
- Ghodasara, S., M. Davidson, M. Reich, C. Savoie, and S. Rodgers. 2011. "Assessing Student Mental Health at the Vanderbilt University School of Medicine." *Academic Medicine: Journal of the Association of American Medical Colleges* 86 (1): 116–121. doi:10.1097/ACM.0b013e3181ff0b56.

- Goudas, M., and G. Giannoudis. 2008. "A Team-Sports-Based Life-Skills Program in a Physical Education Context." *Learning and Instruction* 18 (6): 528–536. doi:10.1016/j.learninstruc.2007.11.002.
- Gould, D., and S. Carson. 2008. "Life Skills Development through Sport: Current Status and Future Directions." *International Review of Sport and Exercise Psychology* 1 (1): 58–78. doi:10.1080/17509840701834573.
- Gould, D., K. Collins, L. Lauer, and Y. Chung. 2007. "Coaching Life Skills through Football: A Study of Award Winning High School Coaches." *Journal of Applied Sport Psychology* 19 (1): 16–37. doi:10.1080/10413200601113786.
- Haramati, A. 2015. "Educating the Educators: A Key to Curricular Integration." *Academic Medicine: Journal of the Association of American Medical Colleges* 90 (2): 133–135. doi:10.1097/acm.0000000000000444.
- Hardcastle, S. J., M. Tye, R. Glassey, and M. S. Hagger. 2015. "Exploring the Perceived Effectiveness of a Life Skills Development Program for High-Performance Athletes." *Psychology of Sport and Exercise* 16: 139–149. doi:10.1016/j.psychsport.2014.10.005.
- Henriksen, K., L. K. Storm, A. Kuettel, L. Linnér, and N. Stambulova. 2020. "A Holistic Ecological Approach to Sport and Study: The Case of an Athlete Friendly University in Denmark." *Psychology of Sport and Exercise* 47: 101637. doi:10.1016/j.psychsport.2019.101637.
- Hermens, N., S. Super, K. T. Verkooijen, and M. A. Koelen. 2017. "A Systematic Review of Life Skill Development through Sports Programs Serving Socially Vulnerable Youth." *Research Quarterly for Exercise and Sport* 88 (4): 408–424. doi:10.1080/02701367.2017.1355527.
- Holt, N. 2008. *Positive Youth Development through Sport*. London: Routledge.
- Holt, N., K. Tamminen, L. Tink, and D. Black. 2009. "An Interpretive Analysis of Life Skills Associated with Sport Participation." *Qualitative Research in Sport and Exercise* 1 (2): 160–175. doi:10.1080/19398440902909017.
- Kotter, T., Y. Tautphaus, K. Obst, E. Voltmer, and M. Scherer. 2016. "Health-Promoting Factors in the Freshman Year of Medical School: A Longitudinal Study." *Medical Education* 50 (6): 646–656. doi:10.1111/medu.12987.
- Levitt, H. M., M. Bamberg, J. W. Creswell, D. M. Frost, R. Josselson, and C. Suárez-Orozco. 2018. "Journal Article Reporting Standards for Qualitative Primary, Qualitative Meta-Analytic, and Mixed Methods Research in Psychology: The APA Publications and Communications Board Task Force Report." *The American Psychologist* 73 (1): 26–46. doi:10.1037/amp0000151.
- Levitt, H., S. Motulsky, F. Wertz, S. Morrow, and J. Ponterotto. 2017. "Recommendations for Designing and Reviewing Qualitative Research in Psychology: Promoting Methodological Integrity." *Qualitative Psychology* 4 (1): 2–22. doi:10.1037/qup0000082.
- Martinek, T., and L. M. Ruiz. 2005. "Promoting Positive Youth Development through a Values-Based Sport Program." *RICYDE Revista Internacional de Ciencias Del Deporte* 1 (1): 1–13. doi:10.5232/ricyde2005.00101.
- Mattick, K., I. Dennis, and J. Bligh. 2004. "Approaches to Learning and Studying in Medical Students: Validation of a Revised Inventory and Its Relation to Student Characteristics and Performance." *Medical Education* 38 (5): 535–543. doi:10.1111/j.1365-2929.2004.01836.x.
- Mossman, G., and L. Cronin. 2019. "Life Skills Development and Enjoyment in Youth Soccer: The Importance of Parental Behaviours." *Journal of Sports Sciences* 37 (8): 850–856. doi:10.1080/02640414.2018.1530580.
- Newble, D. I. 1992. "Assessing Clinical Competence at the Undergraduate Level." *Medical Education* 26 (6): 503–511. doi:10.1111/j.1365-2923.1992.tb00213.x.
- Olmesdahl, P. J. 1999. "The Establishment of Student Needs: An Important Internal Factor Affecting Course Outcome." *Medical Teacher* 21 (2): 174–179. doi:10.1080/01421599979824.
- Park, S., D. Lavallee, and D. Tod. 2013. "Athletes' Career Transition out of Sport: A Systematic Review." *International Review of Sport and Exercise Psychology* 6 (1): 22–53. doi:10.1080/1750984X.2012.687053.
- Pierce, S., D. Gould, and M. Camiré. 2017. "Definition and Model of Life Skills Transfer." *International Review of Sport and Exercise Psychology* 10 (1): 186–211. doi:10.1080/1750984X.2016.1199727.

- Pierce, S., K. Kendellen, M. Camiré, and D. Gould. 2018. "Strategies for Coaching for Life Skills Transfer." *Journal of Sport Psychology in Action* 9 (1): 11–20. doi:10.1080/21520704.2016.1263982.
- Radcliffe, C., and H. Lester. 2003. "Perceived Stress during Undergraduate Medical Training: A Qualitative Study." *Medical Education* 37 (1): 32–38. doi:10.1046/j.1365-2923.2003.01405.x.
- Roth, J. L., and J. Brooks-Gunn. 2016. "Evaluating Youth Development Programs: Progress and Promise." *Applied Developmental Science* 20 (3): 188–202. doi:10.1080/10888691.2015.1113879.
- Rudland, J., C. Golding, and T. Wilkinson. 2020. "The Stress Paradox: How Stress Can Be Good for Learning." *Medical Education* 54 (1): 40–45. doi:10.1111/medu.13830.
- Ryba, T. V., N. B. Stambulova, H. Selänne, K. Aunola, and J. E. Nurmi. 2017. "Sport Has Always Been First for Me "but" All my Free Time is Spent Doing Homework": Dual Career Styles in Late Adolescence." *Psychology of Sport and Exercise* 33: 131–140. doi:10.1016/j.psychsport.2017.08.011.
- Sackett, C., A. Sarah, and L. Gano-Overway. 2017. "Coaching Life Skills Development: Best Practices and High School Tennis Coach Exemplar." *International Sport Coaching Journal* 4 (2): 206–219. doi:10.1123/iscj.2016-0080.
- Shenton, A. K. 2004. "Strategies for Ensuring Trustworthiness in Qualitative Research Projects." *Education for Information* 22 (2): 63–75. doi:10.3233/EFI-2004-22201.
- Smith, B., and K. R. McGannon. 2018. "Developing Rigor in Qualitative Research: Problems and Opportunities within Sport and Exercise Psychology." *International Review of Sport and Exercise Psychology* 11 (1): 101–121. doi:10.1080/1750984X.2017.1317357.
- Smith, S., R. Shochet, M. Keeley, A. Fleming, and K. Moynahan. 2014. "The Growth of Learning Communities in Undergraduate Medical Education." *Academic Medicine: Journal of the Association of American Medical Colleges* 89 (6): 928–933. doi:10.1097/acm.0000000000000239.
- Southwick, F., M. Lewis, D. Treloar, K. Cherabuddi, N. Radhakrishnan, R. Leverence, X. Han, and L. Cottler. 2014. "Applying Athletic Principles to Medical Rounds to Improve Teaching and Patient Care." *Academic Medicine: Journal of the Association of American Medical Colleges* 89 (7): 1018–1023. doi:10.1097/acm.0000000000000278.
- Stambulova, N., T. Ryba, and K. Henriksen. 2021. "Career Development and Transitions of Athletes: The International Society of Sport Psychology Position Stand Revisited." *International Journal of Sport and Exercise Psychology* 19 (4): 524–527. doi:10.1080/16127X.2020.1737836.
- Stambulova, N., and P. Wylleman. 2015. "Dual Career Development and Transitions." *Psychology of Sport and Exercise* 21: 1–3. doi:10.1016/j.psychsport.2015.05.003.
- Stillman, M. 2013. "A New Line of Work." *Academic Medicine: Journal of the Association of American Medical Colleges* 88 (11): 1629. doi:10.1097/ACM.0b013e3182a7a145.
- Subijana, C. L., M. Barriopedro, and E. Conde. 2015. "Supporting Dual Career in Spain: Elite Athletes' Barriers to Study." *Psychology of Sport and Exercise* 21: 57–64. doi:10.1016/j.psychsport.2015.04.012.
- Subijana, C. L., J. Ramos, C. K. Harrison, and C. Lupo. 2020. "Life Skills from Sport: The Former Elite Athlete's Perception." *Sport in Society* 1–14. doi:10.1080/17430437.2020.1820991.
- Turnnidge, J., J. Côté, and D. Hancock. 2014. "Positive Youth Development from Sport to Life: Explicit or Implicit Transfer?" *Quest* 66 (2): 203–217. doi:10.1080/00336297.2013.867275.
- Urlings-Strop, L. C., A. P. N. Themmen, and K. M. Stegers-Jager. 2017. "The Relationship between Extracurricular Activities Assessed during Selection and during Medical School and Performance." *Advances in Health Sciences Education* 22 (2): 287–298. doi:10.1007/s10459-016-9729-y.
- Wass, V., C. Van der Vleuten, J. Shatzer, and R. Jones. 2001. "Assessment of Clinical Competence." *The Lancet* 357 (9260): 945–949. doi:10.1016/S0140-6736(00)04221-5.
- Webb, E., C. H. Ashton, P. Kelly, and F. Kamah. 1998. "An Update on British Medical Students' Lifestyles." *Medical Education* 32 (3): 325–331. doi:10.1046/j.1365-2923.1998.00204.x.
- Williams, C., R. Neil, B. Cropley, T. Woodman, and R. Roberts. 2020. "A Systematic Review of Sport-Based Life Skills Programs for Young People: The Quality of Design and Evaluation Methods." *Journal of Applied Sport Psychology* 1–27. doi:10.1080/10413200.2020.1792583.

Wood, S. M. L. 2017. *Student-Athlete Awareness of Athletic Career Transition and Transferable Skills*. Knoxville, TN: University of Tennessee.

Wray, N., and L. McCall. 2007. "Money Matters: Students' Perceptions of the Costs Associated with Placements." *Medical Education* 41 (10): 975–981. doi:[10.1111/j.1365-2923.2007.02840.x](https://doi.org/10.1111/j.1365-2923.2007.02840.x).