2023, VOL. 19, N. 42, pp. 546 - 559 ISSN 2279-9001

CONTRIBUTO TEORICO

Physical and sports activities for the development of life skills.

Attività fisiche e sportive per lo sviluppo delle life skills.

Ferdinando Cereda, Università Cattolica del Sacro Cuore di Milano

ABSTRACT ITALIANO

Pur essendo generalmente considerate attività prive di valore educativo, l'attività fisica e lo sport possono offrire significativi vantaggi pedagogici nell'educazione degli individui. La partecipazione ad attività fisiche e sportive può determinare alterazioni permanenti nel cervello, che migliorano direttamente le funzioni cognitive. Ciò può influire positivamente sulla memoria, la concentrazione e l'attenzione, incidendo infine sulla capacità dell'individuo di acquisire e memorizzare informazioni. Inoltre, la regolare pratica sportiva può contribuire ad alleviare i sintomi di depressione e ansia, che possono rappresentare ostacoli significativi nel percorso educativo degli adulti. Lo scopo di questa ricerca è identificare e discutere i benefici dello sport, dell'esercizio fisico e dell'attività fisica in relazione all'apprendimento continuo, promuovendo così il benessere fisico e mentale, stimolando la motivazione, l'interesse e lo sviluppo delle capacità. Inoltre, si intende individuare e analizzare le comuni barriere che ostacolano la pratica sportiva, come la limitazione di tempo, risorse e accesso alle informazioni. Saranno delineate alcune strategie per favorire la partecipazione allo sport e all'esercizio fisico, al fine di promuovere l'apprendimento continuo, quali la definizione di obiettivi, la ricerca di informazioni e risorse, nonché l'interazione all'interno di una comunità di apprendimento.

ENGLISH ABSTRACT

Notwithstanding their commonly perceived lack of educational value, sports can in fact confer substantial pedagogical advantages upon individual learners. Participating in physical activities and athletic pursuits can yield enduring modifications to the brain, thereby directly augmenting cognitive functioning. This can ameliorate memory, focus, and attentiveness, ultimately influencing an individual's aptitude for acquiring and retaining knowledge. Furthermore, regular exercise can assuage symptoms of despondency and unease, which can prove particularly troublesome during the pursuit of adult education. Moreover, physical activities and exercises can serve as an instructive instrument for mature learners with specific educational requirements. The objective of this endeavor is to ascertain and expound upon the merits of sports, exercise, and physical activity with regards to lifelong learning, encompassing enhanced physical and mental well-being, heightened motivation and engagement, and fortified skill development. Additionally, it seeks to identify and deliberate upon common impediments, such as time constraints, resource limitations, and inadequate access to information or support. Lastly, strategies for fostering lifelong learning within the realm of sports and exercise will be outlined, encompassing the establishment of objectives, proactive information and resource acquisition, and active participation within a community of learners.

Introduction

Longlife learning (LL) refers to the idea of continuous learning and personal development throughout one's life.

Autore per la Corrispondenza: Ferdinando Cereda- Università Cattolica del Sacro Cuore di Milano, Dipartimento di Pedagogia. E-mail: ferdinando.cereda@unicatt.it

This concept has become increasingly important in a rapidly changing world, where new technologies and innovations are emerging at an unprecedented pace. LL can take many forms, including formal education, personal development, and learning through experiences.

The role of sport and exercise in youth athletes' psychosocial outcomes, such as leadership development, communication skills, emotional regulation, and perseverance, has been extensively discussed, hypothesized, and questioned by researchers in recent years (Kramers, Camiré, & Bean, 2019; Rathwell & Young, 2018; Santos, Strachan, Pereira, & MacDonald, 2019b). These outcomes not only enhance athletes' abilities to perform in the sports context but also have a significant impact on their quality of life and mental health (Vella et al., 2019). Researchers have studied the transfer of psychosocial attributes from sports to other aspects of life and have developed various frameworks and models to understand educational outcomes in different sports contexts (Vella et al., 2019). One such framework is the coaching effectiveness framework developed by Côté and Gilbert (2009), which highlights how PhySA (Physical and Sport Activities) can develop outcomes such as confidence, competence, character. The framework also considers the context in which coaches operate and splits coaching contexts into participation and performance pathways in children, young adolescents, and older adolescents and young adults. However, the body of research on this topic has since grown tremendously, and research into psychosocial coaching approaches in other contexts, such as older adult (Masters) contexts, has increased in recent years (Callary & Young, 2019).

Researchers have made significant efforts to comprehend the psychosocial development of youth athletes within different PhySA context. This has included investigating the educational outcomes of high school sport, elite youth sport, and recreational sport for young athletes aged between 12 and 18 years old (Lacroix, Camiré, & Trudel, 2008; Strachan, Côté, & Deakin, 2011; Vierimaa, Turnnidge, Bruner, & Côté, 2017). However, comprehension of psychosocial outcomes in high performance sport (HP) (Santos, Strachan, Gould, Pereira, & Machado, 2019a) and Masters sport (Callary, Rathwell, & Young, 2015) remains limited.

Despite the growing body of research in this area, there is still a notable gap in the literature when it comes to psychosocial outcomes within the coached contexts of a diverse range of adult sport participants. Consequently, the roles and responsibilities of exercise professional towards psychosocial development in adult are not well defined, and evidence-based recommendations for such development are scarce.

To bridge this knowledge gap and expand understanding of psychosocial outcomes across a range of contexts, more research is necessary. This would not only help identify the best practices for exercise professional working with adult but also contribute to the holistic development of individuals across their lifespan.

Numerous experts in the field of development (Ford & Lerner, 1992; Lerner, Almerigi, Theokas, & Lerner, 2005; Moreno, Nagasawa, & Schwartz, 2018; Theokas et al., 2005) have suggested that childhood and adolescent experiences play a significant role in the development of an individual's character, decision-making abilities, and emotional regulation.

This view has also influenced research in the context of youth sports. Developmental theories (Arnett, 2004) have provided further insight into how environmental factors continue to shape individuals' lives from young adulthood (ages 19 to 34) to mid-to-late adulthood (ages 35 and beyond), including athletes' capacity to make positive life choices, deal with life's challenges, and contribute to society (Gardner & Steinberg, 2005). Despite this, there is limited research linking these abilities directly to what is learned in and through sports participation in high-performance and masters sports.

Playing sports in adulthood serves multiple purposes (Young, 2021), and there are various factors that impact how adults develop and learn from their experiences both in and outside of sports (Callary et al., 2015; MacLellan, Callary, & Young, 2019). It cannot be assumed that sports participation will automatically lead to developmental outcomes for adult athletes.

In the context of continuing education, PhySA can have numerous benefits and implications for individuals of all ages and abilities. One of the key benefits of PhySA is improved physical and mental health (Mikkelsen et al., 2017) Regular exercise has been shown to have a positive impact on a wide range of health outcomes, including cardiovascular health, immune function, and mental well-being (Ruegsegger & Booth, 2018). Moreover, engaging in new forms of physical activity and learning new skills can help to prevent boredom and maintain motivation (Lakicevic et al., 2020), which can be a significant barrier to sustained exercise participation (Duffey et al., 2021).

However, there are also several barriers to PhySA. These include a lack of time, resources, and access to information or support (Allen et al., 2021). For example, individuals may struggle to balance the demands of work, family, and other commitments with the time required to engage in ongoing learning and development (McCurdy et al., 2022). Similarly, individuals in low-income or marginalized communities may have limited access to resources such as equipment, coaching, or educational materials (Hoare et al., 2017). Despite these barriers, there are several strategies that can be employed to promote PhySA. For example, setting clear goals and monitoring progress can help to maintain motivation and focus. Seeking out information and resources, such as online courses, webinars, or coaching programs, can also be beneficial. Additionally, engaging with a community of learners, such as a local sports club or online forum, can provide support and encouragement (Durao et al., 2023).

PhySA can be a crucial concept in the context of continuing education (Thomas et al., 2020). By improve their physical and mental health, enhance their performance, and stay up-to-date with the latest research and best practices individuals can continuously learning and developing their skills and knowledge (Hastie et al., 2013; Till et al., 2022). While there are several barriers to PhySA, strategies such as goal setting, seeking out information and resources, and engaging with a community of learners can be employed to overcome these challenges (Swann et al., 2021; Kwasnicka et al., 2021; McEwan et al., 2016).

The purpose of this work is to outline the benefits of sport and exercise (PhySA) for life skills (LL), while exploring the barriers to PhySA such as a lack of time, resources, and access to information or support. To overcome these barriers, strategies will be outlined for

promoting PhySA. Additionally, potential implications of PhySA for LL and future research and practice will be discussed.

Benefits of PhySA

Regular exercise has been shown to have a positive impact on a wide range of health outcomes, including cardiovascular health, immune function, and mental well-being (Wartburton et al., 2006; Mennitti et al., 2022). Engaging in new forms of PhySA and learning new skills through longlife learning can help to prevent boredom and maintain motivation, which can be a significant barrier to sustained exercise participation (Almarcha et al., 2022).

Moreover, PhySA can enhance skill development and performance. Through ongoing practice and exposure to new challenges, individuals can improve their technical abilities, tactical understanding, and overall performance. This is particularly relevant in sports that require a high degree of skill and precision, such as gymnastics or figure skating (Mack et al., 2021).

Furthermore, PhySA can help individuals to stay up-to-date with the latest research and best practices in their chosen field, which can have implications for both performance and injury prevention. By staying informed and continuously updating their knowledge and skills, for example individuals can optimize their training and reduce the risk of injury.

In addition to the physical benefits, PhySA can also have positive effects on mental health. Engaging in physical activity and learning new skills can help to reduce stress, improve mood, and enhance overall mental well-being (Vella et al., 2019). Furthermore, participating in a community of learners and like-minded individuals can provide a sense of belonging and support, which can be important for maintaining motivation and engagement. Adopting a lifelong approach to learning and development, individuals can optimize their training, reduce the risk of injury, and enhance their overall well-being.

How PhySA increased motivation and engagement

PhySA in LL can lead to increased motivation and engagement by providing individuals with a sense of purpose and direction.

Engaging in ongoing learning and development can help individuals to set goals, track progress, and measure success, which can be important for maintaining motivation and engagement (Sutin et al., 2022). By learning new skills and techniques, individuals can challenge themselves and experience a sense of accomplishment, which can be highly motivating. Additionally, longlife learning can help to prevent boredom and maintain interest in exercise by introducing new activities and challenges. This can be particularly important for individuals who may have plateaued in their training or who are looking for new ways to stay engaged and motivated (Zuber et al., 2020; Schimd et al. 2021).

Moreover, PhySA can provide individuals with a sense of community and support, which can be important for maintaining motivation and engagement. By connecting with other learners and sharing experiences and challenges, individuals can feel a sense of

belonging and accountability, which can help to keep them on track with their goals and aspirations (Davis et al., 2021).

PhySA can help individuals to stay informed and up-to-date with the latest research and best practices in their chosen field, which can be motivating in itself. By gaining knowledge and understanding of the latest trends and developments, individuals can feel empowered and informed, which can increase their motivation and engagement in their chosen activity (Till et al., 2022).

PhySA can lead to increased motivation and engagement by providing individuals with a sense of purpose, challenge, and community. By setting goals, tracking progress, and connecting with other learners, individuals can maintain interest and enthusiasm in their chosen activity and stay motivated over the long term.

How PhySA enhanced skill development

PhySA can lead to enhanced skill development by providing opportunities for ongoing practice and exposure to new challenges. Engaging in continuous learning and personal development can help individuals to refine their techniques, improve their understanding of the sport or exercise, and ultimately enhance their overall performance (Reverdito et al., 2020; Turner et al., 2018).

Individuals can also gain exposure to new forms of physical activity and develop new skills. This can be particularly relevant for individuals who are looking to expand their repertoire or take on new challenges (Giovannelli et al., 2022). For example, a runner who is looking to build strength and endurance may decide to take up cross-training activities like swimming or cycling, which can help to enhance overall fitness and performance. Moreover, PhySA can help individuals to stay up-to-date with the latest research and best practices in their chosen field, which can have implications for both performance and injury prevention. By staying informed and continuously updating their knowledge and skills, individuals can optimize their training and reduce the risk of injury (Lauersen et al., 2014; Emery & Pasanen, 2019).

In addition to enhancing technical abilities, PhySA can also improve tactical understanding and decision-making. Through ongoing practice and exposure to new challenges, individuals can develop a deeper understanding of the sport or exercise, which can help them to make more informed decisions and optimize their performance (Abad Robles et al., 2020; Bermann et al., 2021).

Furthermore, PhySA can help to prevent boredom and maintain motivation by introducing new challenges and opportunities for growth. By continuously learning and developing new skills, individuals can keep their training fresh and exciting, which can help to maintain engagement and interest in their chosen activity over the long term (Velasco & Jorda, 2020).

PhySA can lead to enhanced skill development by providing opportunities for ongoing practice, exposure to new challenges, and staying informed about the latest trends and best practices. By continuously learning and developing new skills, individuals can optimize their training, reduce the risk of injury, and ultimately enhance their overall performance.

Barriers and strategies for PhySA

One of the most significant barriers to PhySA is lack of time. Many individuals struggle to balance work, family, and other commitments, leaving little time for pursuing personal interests and engaging in ongoing learning and development. This can be particularly challenging for individuals who are looking to engage in high-intensity training or competitive sports, which may require significant time and dedication (Jenkin et al., 2018; Allen et al., 2021; Hasset et al., 2021; Vincent et al., 2021).

One strategy for addressing the issue of lack of time is to prioritize and plan ahead. This can involve setting clear goals and priorities and allocating time for specific activities and training sessions. For example, individuals may choose to schedule regular training sessions at a specific time of day, or prioritize certain types of training or activities over others (Cereda, 2013).

Another strategy is to incorporate short, high-intensity workouts or training sessions into daily routines. This can help individuals to maximize the benefits of their training in a shorter amount of time, without sacrificing other commitments (Vincent et al., 2021).

Moreover, individuals can also explore alternative forms of training or physical activity that can be done in shorter amounts of time, such as high-intensity interval training or bodyweight exercises (Ambroży et al., 2022). Financial constraints can also be a significant barrier to PhySA. The cost of equipment, training programs, and coaching can be prohibitively expensive, especially for individuals who are already struggling to make ends meet. This can limit access to high-quality training and support, which can hinder progress and limit opportunities for growth (Steenhuis et al., 2009; Rawal et al., 2020; Pedersen et al., 2021). One strategy for addressing financial constraints is to explore low-cost or free training options, such as online resources or community-based programs. These programs can provide access to training and support without the high cost associated with more traditional training programs. Another strategy is to seek out financial assistance or sponsorship opportunities, such as scholarships or grants. Many organizations offer financial support to individuals who are pursuing training and development in sport and exercise, particularly those who are underrepresented or facing financial barriers. Moreover, individuals can also look for ways to reduce the cost of training and equipment by purchasing used or refurbished equipment, or by seeking out discounts or promotions (Molema et al., 2016; Ball et al., 2017; Reece et al., 2020; Maple et al., 2022).

Lack of access to resources can also be a significant barrier to PhySA for LL. This can include limited access to training facilities, inadequate coaching or support, and limited access to educational resources and training programs. This can limit opportunities for growth and prevent individuals from reaching their full potential (Kuhn et al., 2021; Pandya et al., 2021; Tomaszewski et al., 2022).

One strategy for addressing the issue of lack of access to resources is to explore alternative forms of training and exercise that require minimal equipment or facilities (Kruszyńska & Poczta, 2020). For example, individuals can engage in bodyweight exercises, running or hiking, or other forms of outdoor activity that do not require specialized equipment or facilities.

Another strategy is to seek out community-based programs or organizations that provide access to equipment, facilities, and coaching or training programs at a reduced cost or for free. These programs can provide valuable resources and support to individuals who may not have the means to access these resources on their own (Reece et al., 2020; Maple et al., 2022). Moreover, individuals can also look for ways to collaborate and share resources with others who have similar interests and goals.

This can include forming workout groups or clubs, sharing equipment or facilities, or pooling resources to hire a coach or trainer (Gao et al., 2022). Technology can also be a valuable resource for individuals who lack access to traditional training and exercise resources. Online platforms, such as social media, YouTube, and fitness apps, provide access to a wealth of information and resources on a variety of training and exercise topics.

These platforms can be particularly valuable for individuals who are looking to engage in ongoing learning and development, but may not have access to traditional training and exercise resources (Campelo et al. 2020; Woessner et al., 2021).

Lack of motivation is a barrier to exercise among adults with chronic health conditions (Pedersen et al., 2021) and to participation in sport and exercise among young people (Dishman et al., 2018).

To overcome these barriers, individuals can take a proactive approach to PhySA. For instance, they can prioritize physical activity by setting aside time for regular exercise, even if it is just a few minutes a day. They can also seek out low-cost or free resources for physical activity, such as community centers or online workouts. Moreover, individuals can engage in peer-led or self-directed learning to develop their skills and knowledge related to physical activity and exercise. This can include seeking out online courses, books, or videos on specific topics, or joining online communities or support groups for motivation and accountability (Teixeira et al., 2012; Janols et al., 2022; Linton et al., 2022; Jansons et al., 2023).

Strategies for promoting PhySA

Setting specific, measurable, achievable, relevant, and time-bound (SMART) goals is an effective strategy for promoting PhySA (Swann et al., 2021). Goals provide direction, motivation, and a sense of achievement, which can enhance an individual's overall engagement and commitment to learning. Setting personal goals was associated with increased physical activity among adults (Bailey, 2017) and youngers (Pritchard-Wiart et al., 2019). To support this strategy, individuals can use various goal-setting tools, such as mobile apps, fitness trackers, or online platforms, to track their progress and receive feedback (Tong et al., 2022; Kamel Boulos et al., 2021). Additionally, individuals can seek out the guidance of a certified personal trainer or exercise professional who can provide tailored instruction and support (McClaran et al., 2003; Riseth et al., 2022).

Accessing information and resources related to sport and exercise can help individuals enhance their knowledge, skills, and motivation, which can ultimately lead to improved health and wellbeing (Baceviciene et al., 2019; Haible et al., 2019; Ley et al., 2020). Studies found that access to information was associated with increased physical activity among older adults (Perrenoud et al., 2015; Babak et al., 2022). To facilitate this strategy,

individuals can use various resources, such as books, articles, podcasts, or online courses, to enhance their knowledge and skills related to physical activity and exercise. Additionally, individuals can seek out the guidance of exercise professionals or peers who have experience in specific areas.

Engaging with a community of learners can provide individuals with social support, accountability, and motivation, which can enhance their overall engagement and commitment to longlife learning in sport and exercise. Studies found that peer support was associated with higher levels of exercise motivation among adults (Burton et al., 2018; Chastin et al., 2021; Weiner et al., 20229. To support this strategy, individuals can seek out online communities or support groups that focus on specific topics related to physical activity and exercise. Additionally, individuals can participate in group fitness classes or other exercise programs that provide a sense of community and shared experience.

Conclusions

The concept of PhySA in relation to LL has been discussed in this essay. The benefits of PhySA, including improved LL, increased motivation and engagement, and enhanced skill development, have been examined. Additionally, common barriers to PhySA, such as lack of time, financial constraints, lack of access to resources, and lack of motivation, have been identified. To overcome these barriers, various strategies for promoting PhySA have been suggested, including setting goals, seeking out information and resources, and engaging with a community of learners. Each strategy has been supported with examples and evidence. Overall, the importance of PhySA cannot be overstated. It can help individuals to develop new skills, maintain their physical and mental health, and stay engaged in their sport or exercise activities over the course of their lifetime. By overcoming common barriers and adopting strategies for PhySA, learning individuals can ensure that they continue to improve and grow as athletes and exercisers throughout their lives.

Despite the growing interest in PhySA for LL, there are still many questions that remain unanswered. Therefore, future research in this area could help to provide a more comprehensive understanding of the benefits of PhySA for LL, as well as the most effective strategies for promoting it. Some potential areas for future research include:

1. Exploring the long-term impact of PhySA on LL: While there is evidence to suggest that PhySA can have positive effects LL, more research is needed to understand the long-term impact of these benefits.
2. Examining the role of technology in PhySA: With the rise of online platforms and mobile apps, technology has the potential to play an important role in promoting PhySA in longlife learning. Future research could explore the effectiveness of different types of technology-based interventions for promoting PhySA.
3. Investigating the impact of different types of community-based interventions on PhySA: Community-based interventions, such as group exercise classes and sports clubs, have been shown to promote PhySA. However, more research is needed to understand the factors that make these interventions effective, as well as how they can be tailored to meet the needs of different populations.

Overall, future research in this area could help to identify the most effective strategies for PhySA in LL, as well as the long-term impact of these strategies on physical and mental health outcomes. This, in turn, could inform the development of evidence-based interventions for promoting PhySA and improving health outcomes over the course of an individual's lifetime.

.

References

Abad Robles, M. T., Collado-Mateo, D., Fernández-Espínola, C., Castillo Viera, E., & Giménez Fuentes-Guerra, F. J. (2020). Effects of Teaching Games on Decision Making and Skill Execution: A Systematic Review and Meta-Analysis. *International journal of environmental research and public health*, *17*(2), 505.

Almarcha, M., González, I., Balagué, N., & Javierre, C. (2022). Prescribing or co-designing exercise in healthy adults? Effects on mental health and interoceptive awareness. *Frontiers in behavioral neuroscience*, *16*, 944193.

Ambroży, T., Rydzik, Ł., Obmiński, Z., Spieszny, M., Szczepanik, A., Ambroży, D., Basiaga-Pasternak, J., Spieszny, J., Niewczas, M., & Jaszczur-Nowicki, J. (2022). Effect of High-Intensity Strength and Endurance Training in the Form of Small Circuits on Changes in Lipid Levels in Men Aged 35-40 Years. *Journal of clinical medicine*, *11*(17), 5146.

Arnett, J. (2004). *Adolescence and emerging adulthood: A cultural approach (2nd ed.)*. Upper Saddle River, NJ: Pearson.

Babak, M., Majid, B., Rashid, H., Leili, T., & Shahryar, P. (2022). The factors in older adults' health literacy in the field of physical activity: a qualitative study. *BMC geriatrics*, *22*(1), 630.

Baceviciene, M., Jankauskiene, R., & Emeljanovas, A. (2019). Self-perception of physical activity and fitness is related to lower psychosomatic health symptoms in adolescents with unhealthy lifestyles. *BMC public health*, *19*(1), 980.

Bailey R. R. (2017). Goal Setting and Action Planning for Health Behavior Change. *American journal of lifestyle medicine*, *13*(6), 615–618.

Ball, K., Hunter, R. F., Maple, J. L., Moodie, M., Salmon, J., Ong, K. L., Stephens, L. D., Jackson, M., & Crawford, D. (2017). Can an incentive-based intervention increase physical activity and reduce sitting among adults? the ACHIEVE (Active Choices IncEntiVE) feasibility study. *The international journal of behavioral nutrition and physical activity*, *14*(1), 35.

Bergmann, F., Gray, R., Wachsmuth, S., & Höner, O. (2021). Perceptual-Motor and Perceptual-Cognitive Skill Acquisition in Soccer: A Systematic Review on the Influence of Practice Design and Coaching Behavior. *Frontiers in psychology*, *12*, 772201.

Burton, E., Farrier, K., Hill, K. D., Codde, J., Airey, P., & Hill, A. M. (2018). Effectiveness of peers in delivering programs or motivating older people to increase their participation in physical activity: Systematic review and meta-analysis. *Journal of sports sciences*, *36*(6), 666–678.

Callary, B., & Young, B. W. (2019). What's good for the goose is good for the gander: Using adult learning principles to synergize coach education and coaching practices in masters sport. In B. Callary & B. Gearity (Eds.), *Coach education and development in sport: Instructional strategies* (pp. 215–225). London, UK: Routledge.

Callary, B., Rathwell, S., & Young, B. W. (2015). Insights on the Process of Using Interpretive Phenomenological Analysis in a Sport Coaching Research Project. *Qualitative Report*, *20*(2).

Campelo, A. M., & Katz, L. (2020). Older Adults' Perceptions of the Usefulness of Technologies for Engaging in Physical Activity: Using Focus Groups to Explore Physical Literacy. *International journal of environmental research and public health*, *17*(4), 1144.

Cereda, F. (2013). *Teoria, tecnica e didattica del fitness.* Vita & Pensiero: Milano.

Chastin, S., Gardiner, P. A., Harvey, J. A., Leask, C. F., Jerez-Roig, J., Rosenberg, D., Ashe, M. C., Helbostad, J. L., & Skelton, D. A. (2021). Interventions for reducing sedentary behaviour in community-dwelling older adults. *The Cochrane database of systematic reviews*, *6*(6), CD012784.

Côté, J., & Gilbert, W. (2009). An integrative definition of coaching effectiveness and expertise. *International journal of sports science & coaching*, *4*(3), 307-323.

Davis, A. J., MacCarron, P., & Cohen, E. (2021). Social reward and support effects on exercise experiences and performance: Evidence from parkrun. *PloS one*, *16*(9), e0256546.

Dishman, R. K., McIver, K. L., Dowda, M., & Pate, R. R. (2018). Declining Physical Activity and Motivation from Middle School to High School. *Medicine and science in sports and exercise*, *50*(6), 1206–1215.

Duffey, K., Barbosa, A., Whiting, S., Mendes, R., Yordi Aguirre, I., Tcymbal, A., Abu-Omar, K., Gelius, P., & Breda, J. (2021). Barriers and Facilitators of Physical Activity Participation in Adolescent Girls: A Systematic Review of Systematic Reviews. *Frontiers in public health*, *9*, 743935.

Durão, S., Burns, J., Schmidt, B. M., Tumusiime, D., Hohlfeld, A., Pfadenhauer, L., Ongolo-Zogo, C., Rehfuess, E., & Kredo, T. (2023). Infrastructure, policy and regulatory interventions to increase physical activity to prevent cardiovascular diseases and diabetes: a systematic review. *BMC public health*, *23*(1), 112.

Emery, C. A., & Pasanen, K. (2019). Current trends in sport injury prevention. *Best practice & research. Clinical rheumatology*, *33*(1), 3–15.

Ford, D. H., & Lerner, R. M. (1992). *Developmental systems theory: An integrative approach*. Sage Publications, Inc.

Gao, W., Feng, W., Xu, Q., Lu, S., & Cao, K. (2022). Barriers associated with the public use of sports facilities in China: a qualitative study. *BMC public health*, *22*(1), 2112.

Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: an experimental study. *Developmental psychology*, *41*(4), 625.

Giovanelli, N., Mari, L., Patini, A., & Lazzer, S. (2022). Pole Walking Is Faster but Not Cheaper During Steep Uphill Walking. *International Journal of Sports Physiology and Performance*, *1*(aop), 1-7.

Haible, S., Volk, C., Demetriou, Y., Höner, O., Thiel, A., & Sudeck, G. (2019). Physical Activity-Related Health Competence, Physical Activity, and Physical Fitness: Analysis of Control Competence for the Self-Directed Exercise of Adolescents. *International journal of environmental research and public health*, *17*(1), 39.

Hassett, L., Shields, N., Cole, J., Owen, K., & Sherrington, C. (2021). Comparisons of leisure-time physical activity participation by adults with and without a disability: results of an Australian cross-sectional national survey. *BMJ open sport & exercise medicine*, *7*(1), e000991.

Hastie, P. A., Calderón, A., Rolim, R. J., & Guarino, A. J. (2013). The development of skill and knowledge during a sport education season of track and field athletics. *Research quarterly for exercise and sport*, *84*(3), 336–344.

Hoare E, Stavreski B, Jennings GL, Kingwell BA. (2017). Exploring Motivation and Barriers to Physical Activity among Active and Inactive Australian Adults. *Sports, 5*(3):47.

Janols, R., Sandlund, M., Lindgren, H., & Pettersson, B. (2022). Older adults as designers of behavior change strategies to increase physical activity-Report of a participatory design process. *Frontiers in public health*, *10*, 988470.

Jansons, P., Fyfe, J. J., Dalla Via, J., Daly, R. M., & Scott, D. (2023). Barriers and enablers associated with participation in a home-based pragmatic exercise snacking program in older adults delivered and monitored by Amazon Alexa: a qualitative study. *Aging clinical and experimental research*, 1–9. Advance online publication.

Jenkin, C. R., Eime, R. M., Westerbeek, H., & van Uffelen, J. G. Z. (2018). Sport for Adults Aged 50+ Years: Participation Benefits and Barriers. *Journal of aging and physical activity*, *26*(3), 363–371.

Kamel Boulos, M. N., & Yang, S. P. (2021). Mobile physical activity planning and tracking: a brief overview of current options and desiderata for future solutions. *mHealth*, *7*, 13.

Kramers, S., Camiré, M., & Bean, C. (2019). Profiling patterns of congruence in youth golf coaches' life skills teaching. *Journal of Applied Sport Psychology*, Advance online publication. doi: 10.1080/10413200.2019.1596178.

Kruszyńska, E., & Poczta, J. (2020). Difficulties Limiting Access to Sports and Recreational Facilities in the City in the Perceptions of Service Users. Sports and Recreational Infrastructure Management Policy-Poznan Case Study. *International journal of environmental research and public health*, *17*(5), 1768.

Kuhn, A. W., Grusky, A. Z., Cash, C. R., Churchwell, A. L., & Diamond, A. B. (2021). Disparities and Inequities in Youth Sports. *Current sports medicine reports*, *20*(9), 494–498.

Kwasnicka, D., Ntoumanis, N., & Sniehotta, F. F. (2021). Setting performance and learning goals is useful for active and inactive individuals, if goals are personalized and flexible: commentary on Swann et al. (2020). *Health psychology review*, *15*(1), 51–55.

Lacroix, C., Camiré, M., & Trudel, P. (2008). High school coachescharacteristics and their perspectives on the purpose of school sport participation. International journal of coaching science, 2(2), 23-42.

Lakicevic N, Gentile A, Mehrabi S, Cassar S, Parker K, Roklicer R, Bianco A, Drid P. (2020). Make Fitness Fun: Could Novelty Be the Key Determinant for Physical Activity Adherence? *Front Psychol.* Oct 15;11:577522.

Lauersen, J. B., Bertelsen, D. M., & Andersen, L. B. (2014). The effectiveness of exercise interventions to prevent sports injuries: a systematic review and meta-analysis of randomised controlled trials. *British journal of sports medicine*, *48*(11), 871–877.

Ley C. (2020). Participation Motives of Sport and Exercise Maintainers: Influences of Age and Gender. International journal of environmental research and public health, 17(21), 7830.

Lerner, R. M., Almerigi, J. B., Theokas, C., & Lerner, J. V. (2005). Positive youth development a view of the issues. *The journal of early adolescence,* 25(1), 10-16.

Linton, L., Barr, M., & Valentin, S. (2022). Prehabilitation for Recreational Runners: Motivators, Influencers, and Barriers to Injury Prevention Strategies for Running-Related Injury. Journal of sport rehabilitation, 31(5), 544–553.

Mack, M., Schmidt, M., & Heinen, T. (2021). The Relationship Between the Perceived Movement Quality and the Kinematic Pattern of Complex Skills in Gymnastics. *Journal of human kinetics*, *77*, 5–13.

MacLellan, J., Callary, B., & Young, B. W. (2019). Adult learning principles in Master's Sport: A coach's perspective. *Canadian Journal for the Study of Adult Education*, *31*(01).

Maple, J. L., Ananthapavan, J., Ball, K., Teychenne, M., & Moodie, M. (2022). Economic evaluation of an incentive-based program to increase physical activity and reduce sedentary behaviour in middle-aged adults. *BMC health services research*, *22*(1), 932.

McClaran S. R. (2003). The effectiveness of personal training on changing attitudes towards physical activity. *Journal of sports science & medicine*, *2*(1), 10–14.

McCurdy, A., Stearns, J. A., Rhodes, R. E., Hopkins, D., Mummery, K., & Spence, J. C. (2022). Relationships Between Physical Activity, Boredom Proneness, and Subjective Well-Being Among U.K. Adults During the COVID-19 Pandemic. *Journal of sport & exercise psychology*, *44*(3), 189–197.

McEwan, D., Harden, S. M., Zumbo, B. D., Sylvester, B. D., Kaulius, M., Ruissen, G. R., Dowd, A. J., & Beauchamp, M. R. (2016). The effectiveness of multi-component goal setting interventions for changing physical activity behaviour: a systematic review and meta-analysis. *Health psychology review*, *10*(1), 67–88.

Mennitti, C., Ranieri, A., Nigro, E., Tripodi, L., Brancaccio, M., Ulisse, J., Gentile, L., Fimiani, F., Cesaro, A., D'Alicandro, G., Limongelli, G., Daniele, A., Pero, R., Frisso, G., Calabrò, P., Pastore, L., Licenziati, M. R., Scudiero, O., & Lombardo, B. (2022). The Impact of Physical Exercise on Obesity in a Cohort of Southern Italian Obese Children: Improvement in Cardiovascular Risk and Immune System Biomarkers. *International journal of environmental research and public health*, *20*(1), 602.

Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas*, *106*, 48–56.

Molema, C. C., Wendel-Vos, G. C., Puijk, L., Jensen, J. D., Schuit, A. J., & de Wit, G. A. (2016). A systematic review of financial incentives given in the healthcare setting; do they effectively improve physical activity levels?. *BMC sports science, medicine & rehabilitation*, *8*, 15.

Moreno, A. J., Nagasawa, M. K., & Schwartz, T. (2019). Social and emotional learning and early childhood education: Redundant terms?. *Contemporary Issues in Early Childhood*, *20*(3), 221-235.

Murray, J. M., Brennan, S. F., French, D. P., Patterson, C. C., Kee, F., & Hunter, R. F. (2017). Effectiveness of physical activity interventions in achieving behaviour change maintenance in young and middle aged adults: A systematic review and meta-analysis. *Social science & medicine (1982)*, *192*, 125–133.

Pandya N. K. (2021). Disparities in Youth Sports and Barriers to Participation. *Current reviews in musculoskeletal medicine*, *14*(6), 441–446.

Pedersen, M. R. L., Hansen, A. F., & Elmose-Østerlund, K. (2021). Motives and Barriers Related to Physical Activity and Sport across Social Backgrounds: Implications for Health Promotion. *International journal of environmental research and public health*, *18*(11), 5810.

Perrenoud, B., Velonaki, V. S., Bodenmann, P., & Ramelet, A. S. (2015). The effectiveness of health literacy interventions on the informed consent process of health care users: a systematic review protocol. *JBI database of systematic reviews and implementation reports*, *13*(10), 82–94.

Pritchard-Wiart, L., Thompson-Hodgetts, S., & McKillop, A. B. (2019). A review of goal setting theories relevant to goal setting in paediatric rehabilitation. *Clinical rehabilitation*, *33*(9), 1515–1526.

Rathwell, S., & Young, B. W. (2018). Coaches' perspectives on personal and psychosocial development in university sport. *International Sport Coaching Journal*, *5*(1), 1-13.

Rawal, L. B., Smith, B. J., Quach, H., & Renzaho, A. M. N. (2020). Physical Activity among Adults with Low Socioeconomic Status Living in Industrialized Countries: A Meta-Ethnographic Approach to Understanding Socioecological Complexities. *Journal of environmental and public health*, *2020*, 4283027.

Reece, L. J., McInerney, C., Blazek, K., Foley, B. C., Schmutz, L., Bellew, B., & Bauman, A. E. (2020). Reducing financial barriers through the implementation of voucher incentives to promote children's participation in community sport in Australia. *BMC public health*, *20*(1), 19.

Reverdito RS, Galatti LR, Strachan L, Scaglia AJ, Paes RR. (2020). Coaching and continuity make a difference: competence effects in a youth sport program. *Journal of Physical Education and Sport,* 20(4):1964–71.

Riseth, L., Lund Nilsen, T. I., Hatlen Nøst, T., & Steinsbekk, A. (2022). Fitness center use and subsequent achievement of exercise goals. A prospective study on long-term fitness center members. *BMC sports science, medicine & rehabilitation*, *14*(1), 9.

Ruegsegger, G. N., & Booth, F. W. (2018). Health Benefits of Exercise. *Cold Spring Harbor perspectives in medicine*, *8*(7), a029694. https://doi.org/10.1101/cshperspect.a029694

Santos, F., Strachan, L., Gould, D., Pereira, P., & Machado, C. (2019a). The role of team captains in integrating positive teammate psychological development in high-performance sport. *The Sport Psychologist*, *33*(1), 1-11.

Santos, F., Strachan, L., Pereira, P., & MacDonald, D. (2019b). *Coaching positive development: Implications and practices from around the world*. Omniserviços.

Schmid, M. J., Charbonnet, B., Conzelmann, A., & Zuber, C. (2021). More Success With the Optimal Motivational Pattern? A Prospective Longitudinal Study of Young Athletes in Individual Sports. *Frontiers in psychology*, *11*, 606272.

Steenhuis, I. H., Nooy, S. B., Moes, M. J., & Schuit, A. J. (2009). Financial barriers and pricing strategies related to participation in sports activities: the perceptions of people of low income. *Journal of physical activity & health*, *6*(6), 716–721.

Strachan, L., Côté, J., & Deakin, J. (2011). A new view: Exploring positive youth development in elite sport contexts. *Qualitative research in sport, exercise and health*, *3*(1), 9-32.

Sutin, A. R., Luchetti, M., Stephan, Y., & Terracciano, A. (2022). Sense of purpose in life and motivation, barriers, and engagement in physical activity and sedentary behavior: Test of a mediational model. *Journal of health psychology*, *27*(9), 2068–2078.

Swann, C., Rosenbaum, S., Lawrence, A., Vella, S. A., McEwan, D., & Ekkekakis, P. (2021). Updating goal-setting theory in physical activity promotion: a critical conceptual review. *Health psychology review*, *15*(1), 34–50.

Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self-determination theory: a systematic review. *The international journal of behavioral nutrition and physical activity*, *9*, 78.

Theokas, C., Almerigi, J. B., Lerner, R. M., Dowling, E. M., Benson, P. L., Scales, P. C., & von Eye, A. (2005). Conceptualizing and modeling individual and ecological asset components of thriving in early adolescence. *The Journal of Early Adolescence*, *25*(1), 113-143.

Thomas, E., Bianco, A., Tabacchi, G., Marques da Silva, C., Loureiro, N., Basile, M., Giaccone, M., Sturm, D. J., Şahin, F. N., Güler, Ö., Gómez-López, M., López Sánchez, G. F., Pajaujiene, S., Zuoziene, I. J., Rada, A., Alesi, M., & Palma, A. (2020). Effects of a Physical Activity Intervention on Physical Fitness of schoolchildren: The Enriched Sport Activity Program. *International journal of environmental research and public health*, *17*(5), 1723.

Till, K., Lloyd, R. S., McCormack, S., Williams, G., Baker, J., & Eisenmann, J. C. (2022). Optimising long-term athletic development: An investigation of practitioners' knowledge, adherence, practices and challenges. *PloS one*, *17*(1), e0262995.

Tomaszewski, B., Savage, M. N., & Hume, K. (2022). Examining physical activity and quality of life in adults with autism spectrum disorder and intellectual disability. *Journal of intellectual disabilities : JOID*, *26*(4), 1075–1088.

Tong, H. L., Maher, C., Parker, K., Pham, T. D., Neves, A. L., Riordan, B., Chow, C. K., Laranjo, L., & Quiroz, J. C. (2022). The use of mobile apps and fitness trackers to promote healthy behaviors during COVID-19: A cross-sectional survey. *PLOS Digital Health*, *1*(8), e0000087.

Turner G, Rudz T, Bertolacci L. (2018). Strength and conditioning coaching practice and positive youth athletic development: Context-specific application of the developmental relationships framework. *Strength & Conditioning Journal,* 40(6):49–55.

Velasco, F., & Jorda, R. (2020). Portrait of Boredom Among Athletes and Its Implications in Sports Management: A Multi-Method Approach. *Frontiers in psychology*, *11*, 831.

Vella, S. A., Swann, C., Boydell, K. M., Eckermann, S., Fogarty, A., Hurley, D., ... & Deane, F. P. (2019). Sports-based mental health promotion in Australia: formative evaluation. *Psychology of Sport and Exercise*, *45*, 101560.

Vierimaa, M., Turnnidge, J., Bruner, M., & Côté, J. (2017). Just for the fun of it: Coaches' perceptions of an exemplary community youth sport program. *Physical Education and Sport Pedagogy*, *22*(6), 603-617.

Vicent, M., Sanmartín, R., Gonzálvez, C., Vásconez-Rubio, O., & García-Fernández, J. M. (2021). Perfectionism, Motives, and Barriers to Exercise from a Person-Oriented Approach. *International journal of environmental research and public health*, *18*(15), 8125.

Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *CMAJ: Canadian Medical Association journal = journal de l'Association medicale canadienne*, *174*(6), 801–809.

Weiner, L. S., Nagel, S., Irene Su, H., Hurst, S., Levy, S. S., Arredondo, E. M., Hekler, E., & Hartman, S. J. (2022). A remotely delivered, peer-led intervention to improve physical activity and quality of life in younger breast cancer survivors. *Journal of behavioral medicine*, 1–16. Advance online publication.

Woessner, M. N., Tacey, A., Levinger-Limor, A., Parker, A. G., Levinger, P., & Levinger, I. (2021). The Evolution of Technology and Physical Inactivity: The Good, the Bad, and the Way Forward. *Frontiers in public health*, *9*, 655491.

Young, R., & Callary (2021). Giving due deliberation to masters athletes: The time has come. *SIRCuit magazine.* Retrived from https://sirc.ca/blog/giving-due-deliberation-to-masters -athletes

Zuber, C., Schmid, M. J., & Conzelmann, A. (2020). Achievement-Motivated Behavior in Individual Sports: Evidence for the Construct and Criterion Validity of the AMBIS-I Coach-Rating Scale. *Journal of sports science & medicine*, *19*(1), 10–19.