Nuove tecnologie per garantire il benessere fisico: strategie didattiche e motivazionali

New technologies to guarantee physical well-being: didactic and motivational strategies

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ABSTRACT
The introductory part of this paper will discuss the importance of the use of new technologies, analysing their typologies and benefits, in the context of prevention and treatment of chronic and degenerative diseases, with the aim of guaranteeing physical well-being and the consequent improvement of the quality of life in modern society. In the second section, the contribution, using a narrative theoretical method, will deal with the methodologies applied in the pursuit of the aforementioned aim. In the final section, the benefits found in the population will be highlighted, underlining how the link between new technologies and physical well-being will make them inextricably complementary in the future.

La parte introduttiva di questo contributo discuterà l'importanza dell'utilizzo delle nuove tecnologie, analizzandone le tipologie e i benefici, nell'ambito della prevenzione e cura delle malattie croniche e degenerative, con l'obiettivo di garantire il benessere fisico e il conseguente miglioramento della la qualità della vita nella società moderna. Nella seconda sezione, il contributo, utilizzando un metodo teorico narrativo, tratterà le metodologie applicate nel perseguimento del suddetto obiettivo. Nella sezione finale verranno evidenziati i benefici riscontrati nella popolazione, sottolineando come il legame tra le nuove tecnologie e il benessere fisico le renderà indissolubilmente complementari in futuro.

KEYWORDS
Virtual reality, exergames, WEHMIX, motivation, emotional support, self-monitoring tools.
Realtà virtuale, exergames, WEHMIX, motivazione, supporto emotivo, strumenti di automonitoraggio.

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Introduction

Physical activity has always been the most incisive modifiable factor in preventing the onset of chronic and degenerative diseases, together with diet, alcoholic beverages and smoking. Diseases such as obesity, hypertension, diabetes and cancer are widespread among the world population, thus representing the leading causes of death, with an incidence equal to 46%.

As per the World Health Organization, physical activity appears to be a definitely incisive practice in order to ensure physical and mental well-being in the world population. The objective, according to reports by the 2013–2020 Global Preventive Plan and the 2016–2025 European Plan, is to reduce the prevalence of physical inactivity by 10%, so as to reduce the risk of premature mortality due to diseases by 25%. Non-communicable degenerative diseases such as: hypertension, diabetes and obesity.

The benefits of regular physical activity are many: the maintenance of strength and endurance levels, the improvement of flexibility and coordination, the preservation of bone health through the reduction of the incidence of osteopathies, the achievement and consecutive increase of greater motor and cardiorespiratory skills and abilities, the increase of levels of HDL cholesterol in the blood, the reduction of blood and heart pressure, the reduction of inflammation, and the improvement of blood glucose levels. The achievement of these benefits sees the increasing involvement of new technologies to treat and in particular prevent the onset of chronic degenerative diseases among the Italian, European and world populations.

According to Parlebas (2016), sociologist and theorist of contemporary physical education, the emotional dimension is always solicited when practicing motor activity. This would allow the individual to tune into his inner "I" and to initiate a process of emotional literacy aimed at developing emotional intelligence and social skills, which is essential in real life and in the management of intra- and interpersonal relationships.

Considering the recent results that support the hypothesis that exercise and physical activity have an effect on the structural growth of the brain and its neurocognitive functional development, in particular on executive functions, it would be desirable to promote motor activity in schools but above all active, creative and social play and the ability to synthesize the need for motor skills and that of playfulness. Active play is, in fact, the only occasion in which children can experiment with their skills, make mistakes and learn from them in a protected way without performance anxiety and negative stress; it is the setting of choice for situated learning, in which the learning process is dynamic, meaningful and motivated. In the game, the child is the main actor. He is directly involved and negotiates or tacitly accepts the rules underlying it, without the authoritarian pressure of an institutional regulation and the consequent fear of punishment. On the other hand, the term sport actually means fun. Even if this activity is no longer referred to in this sense, its intrinsic meaning survives.

Therefore, there is a clear need to combine play with quality physical activity, and to do so, the school should be equipped with conventional and non-conventional equipment and a wider range of effective educational strategies.

An attempt to intertwine motor activity and play and the increase of locomotion and social skills can be made through the use of information technologies within the educational and school context, focusing on exergames-based didactics (Sgrò et al., 2017).

The use of exergames is also opening a gap in the treatment of children suffering from coordination and developmental disorders, intellectual disability, ADHD (improvement of selective attention), autism (improvement in the reduction of stereotypies and in eye-body coordination) and paralysis cerebral, for an improvement of psycho-physical well-being and an increase in motor and non-motor skills.

A recent study by Nieto and colleagues (2020) showed an acute improvement on the executive functions (visual attention, mental processing, working memory, inhibition response and motor planning) and chronic benefits regarding mathematics, self-esteem, classroom behaviour, motivation and parenting and interpersonal relationships. Parallel to the use of exergaming protocols, interesting is the use of virtual games (games placed in a virtual reality) which offer great advantages for learning. First of all, they allow you to "feel" objects directly and experience events that are physically out of our reach, supporting training in a very safe environment without potential real dangers and increasing learner engagement, selective attention and motivation (Freina & Ott, 2015). Furthermore, virtual reality can be used to improve the teaching of sports-related motor skills (Fluet, et al., 2006; Eaves, et al., 2011). Learners, while having fun, can practice physical exercise, taking care to make these games usable and adaptable to all needs, set according to a scale of increasing difficulty, graduated and calibrated based on the avatar entering and the level of physical qualities and muscle groups and/or joint to exercise. VR exergames are often perceived as fun to play, but the idea behind them also enhances selective attention, which is quite important to everyday life and represents a more general case of enhancing physical activity (Alhadad & Aboo, 2018).

A recent 2021 systematic review conducted by De la Hoz and colleagues investigates the impact on motivation in adolescents following the use of ICT as regulators of physical activity in the school setting, concluding that a functional use of technologies can help teachers to promote the practice of physical activity even outside the formal context of the classroom, favouring the autonomy of young people in the control of their own activity and participation in the new sports practice environments. Teachers play an important role in the different educational phases and can concretize a synod between the need for a renewal of sports teaching and the use and experimentation of ICT, exergames and VR as mediators for the improvement of healthier habits and lifestyles and the acquisition of transversal skills.

1. From exergames to wehmix

More often in recent years (and especially due to the pandemic), the use of digital tools has been used to ensure that the population maintains a stable psychophysical balance. One of the most used tools were exergames, i.e., digitized sports games that guarantee regular physical activity comfortably within the home. Activities such as playing tennis, football or beach soccer are no longer considered practicable only by turning to sports centres, especially in the company of other participants, due to the risk of COVID-19 infection (Mirra & Aguoli, 2021). In fact, currently, a television and a multimedia console such as the Wii or Kinect are enough to satisfy the need for physical activity. By resorting to digital platforms and exergames, the player is guaranteed to undertake real physical activity. The use of such multimedia tools is particularly used in the healthcare sector to ensure

a proper rehabilitation path for patients suffering from multiple sclerosis (MS). The effectiveness of these games is attributable to a cognitive and physical effort. In case of mild physical disability caused by multiple sclerosis (MS), exergames ensure the maintenance of the benefits obtained from rehabilitation therapy. In case of more pronounced motor disabilities, resorting to these games increases the benefits due to rehabilitation. It is necessary to underline that the National Health Service (SSN) ensures only three cycles of ten rehabilitation sessions following MS; the other sessions necessary for the patient to maintain and improve their conditions must be financed by this. It is easy to understand how much exergames are functional in reducing the costs that a sclerotic patient would incur in rehabilitation and how much they can guarantee him a constant increase in the quality of life. Obviously, the use of these games is not necessarily bound to a single category of patients, but to anyone. In particular, they would benefit overweight, obese, adolescent, adult and senile people (Lucca & Como, 2018). There are several studies on the effectiveness of exergames in patients suffering from multiple sclerosis in the short term due to a modification of the cerebral structure of the cerebellum. Unfortunately, in the long term, the results are not yet accurate enough as scientific research in this regard has only recently begun. In the years to come, it will certainly be possible to ascertain its effectiveness. The types of games on the market are many. Among the best known, effective and popular games is the *Wii Fit Balance*. Virtual wellness is the set of virtual and digital devices with the purpose of maintaining the psychophysical well-being of people as well as preventing and treating chronic degenerative diseases. It is not limited only to the above-mentioned digital games. Another example is VirZOOM, a system based on virtual reality, which allows you to lose weight thanks to an interactive exercise bike that adjusts the game based on the extent and frequency of the player's pedalling. The scenarios proposed by the game are highly diverse (Correale, et al., 2015). The player will be able to see himself catapulted into an aerial battle, participate in a race on two/four wheels or find himself riding a horse in a race at the hippodrome. The exercise bike has special sensors that guarantee its interaction with the virtual context thanks to the viewer. VirZOOM is also compatible with various multimedia platforms, which makes it perfect to meet the needs of a wide range of users. The device has a single flaw: If used for too long, it can induce motion sickness, also called movement disease, in its users, causing dizziness and a sense of disorientation. Although such disorders have emerged on a few occasions, the many benefits found among the players are certainly attributable to the improvement of their physical conditions and their sports performances.

Physical health, as we know, passes through psychological health (Chiapasco, et al., 2020). The synergistic link between body and mind is undeniable and inseparable. As several studies show, improving sports performance has a positive effect on people's mental health and vice versa. All this leads to an increase in the quality of life of anyone who starts practicing sports regularly. In the same way, it is possible to say that those who decide to start a meditative path such as mindfulness will certainly find considerable benefits from a physical point of view as well. Currently, to ensure the reduction of stress, anxiety and depression levels among the population, meditative techniques are used, mediated by the use of information and communication technologies, videos, recordings with relaxing background music and instructions provided by professionals or teachers. This is guided meditation. Italian guided meditation is an exercise widely used in clinical practice, academic research and scientific investigation. Guided meditation includes lis-

tening to relaxing music, receptive music therapy, mental images, relaxation, various forms of meditative awareness and therapeutic writing. It has been found that guided meditation, when used concomitantly with clinical strategies, guarantees psychophysical improvements when applied in therapeutic, rehabilitative and educational treatments (Avila, 2020). This application reduces stress levels, develops adaptability, cures insomnia, teaches anger management and improves the physical and mental conditions of the practitioners, ensuring an improvement in their quality of life. Many professional athletes use such exercises to improve their sports skills. Sports psychologists teach them to manage pain and dominate their emotions during a sporting event, which inevitably benefits performance. By virtue of what has been reported, it is evident that the use of guided meditation practices improves the psychophysical health of anyone who adopts it in their daily life. The apps available on smartphones and smartwatches are also evolving in order to offer greater well-being to their users. In fact, more and more often, they are turning to the potential of the digital world to increase their physical and psychological well-being. Internet users are currently spreading more motivational messages among their contacts. More than ever, we are resorting to the creation of groups to support other users from the predominant dissemination of unfounded information such as fake news, and the web is now turning into a virtual place to find more and more advice to improve people's quality of life. In this context, we further try to protect the mental health of users, discussing emotional problems and offering valid solutions from experts who are first exposed to social networks in order to guarantee greater psychophysical well-being to users (Di Maglie, 2020). The social pressure due to the use of social media spreads anxiety in the population, and apps are hence increasingly encouraged to provide positive feedback by seeking a healthier relationship with the population. Changing the approach and development perspectives of new apps changes the standards of social desirability, increasingly aimed at offering greater physical, emotional and psychological well-being. Apps are being created that count the calories consumed during the day, monitor physical exercise and sleep, remind you to take water during the day to stay hydrated and as previously reported, teach how to meditate and regulate their circadian rhythms. Brands do not deviate from this trend. "IKEA", with its "Blackout Campaign", has made the smartphone an excellent tool for falling asleep. The giant "Instagram", on the other hand, has developed stories capable of inducing sleep to users. By collaborating with the "Calm" app, "Uber" offers its customers the opportunity to relax by adopting breathing exercises. As they are deemed capable of getting gamers addicted, gaming giant "Tencent" has imposed a maximum of two hours of gameplay on users under the age of sixteen. "Facebook" has introduced within its social algorithms the capability of eliminating deceptive paid advertising (advertising/ads). In order to avoid interference with the emotional sphere of its users, "YouTube" deactivates the comments on the videos of the profiles belonging to people under the age of sixteen. Finally, "Instagram" also removes likes to prevent popularity from turning into a social currency that can be spent and used within the market. Not even the giant "Google" has remained indifferent to providing tools aimed at ensuring the right interaction by internet users with technology by resorting to "Digital Wellbeing Experiments". "Desert Island" encourages you to use as few apps as possible, while "We Flip" dissuades people from forming completely virtual group relationships by providing its users with the possibility of creating real interpersonal relationships (Bianca, 2021). As observed from all these cases, the multinationals of information, gaming and social media are becoming increasingly attentive to the

good psychophysical condition and quality of life of their users. In order to avoid the further spread of chronic degenerative diseases among the population, the WEHMIX (WEarable Human Machine Interaction user eXperience for Healthcare) research project was launched. WEHMIX was born with the goal of improving the quality of services in the field of health and assistance to people by using various technologies such as Augmented Reality (AR), Motion Tracking (MT) and Wearable Device (WD). There is a substantial difference between virtual reality and augmented reality. In virtual reality, the information added or subtracted electronically is preponderant, to the point that people find themselves immersed in a situation in which sensory perceptions due to interactions with the surrounding environment are no longer present and are replaced by others. In augmented reality (AR), on the other hand, the person continues to interact and perceive physical reality but benefits from additional information or technological manipulation. Motion Tracking (MT) (often referred to in Italian as Mocap, "motion capture") is the process of recording the movement of the human body or objects, used in medical, military and entertainment garments (Cao, et al., 2021). On the other hand, wearable devices (ex. Smartwatch etc.) are part of a type of electronic devices usually worn on the wrist and with functions such as notifiers, connected to the smartphone with wireless, medium wave FM or more often with Bluetooth. WEHMIX uses and combines all the above-mentioned technologies and devices and works to decrease and prevent the onset of chronic and degenerative diseases by promoting healthy lifestyles. The idea of the project is to develop an innovative platform and a web app that can improve the user experience using wearable devices with the aim of encouraging a good lifestyle. First, WEHMIX allows users to connect different devices wearables to a single digital platform specially designed to combine and organize data so that the user can easily interpret them. Thanks to this, people have an immediate and unique access point to consult a summary of all their data without having to log into the app of each individual device. In practice, we are witnessing an intertwining of the data collected by each single device so as to have a global and complex clinical picture (Bates, et al., 2021). Secondly, WEHMIX allows you to create a personalized health/training plan, with specific goals and characterized by monitored activities. In this way, the app satisfies the needs of a wide range of user categories, such as sportspeople who want to improve their physical activity, seniors who want to monitor their health and prevent chronic diseases or employees with sedentary jobs who want to improve their well-being and productivity through a healthier lifestyle. Finally, the platform allows users to access personalized support from a group of health and wellness professionals, particularly for setting goals and interpreting data and feedback on progress. What has been reported so far makes us understand how technology nowadays is inextricably linked to people's health by designing, monitoring and personalizing actual training plans, which are essential for combating the onset of chronic and degenerative diseases among the population.

2. Motivational and applied methods to physical well-being

The use of physical exercise support technologies does not in itself guarantee the achievement of a concrete goal and consequent greater well-being for the amateur or professional sportsman. Without the right motivation, it is impossible to think about implementing an effective and efficient training program. Let's start with the definition of motivation. In psychology, motivation is the stimulus, con-

scious or not, to take action aimed at achieving a desired goal. For Capodieci et al., (2018), motivation is everything that gives purpose to a behaviour. In sports psychology, there is a distinction made between intrinsic and extrinsic motivation. The first involves carrying out an activity for the satisfaction it gives you, without conditioning and obligations coming from outside. In addition to making you feel better, intrinsic motivation ensures that you reach and exceed the set goal. The extrinsic motivation, on the other hand, is the determination for the achievement of objectives deriving from external stimuli. An example of extrinsic motivation is the assignment of a task by your employer or the achievement of a sporting goal assigned by your coach or athletic trainer. Ryan and Deci, on the other hand, identify six different types of motivation: in the absence of motivation, the individual does not intend to carry out what is requested; in the external motivation, as in the extrinsic previously treated, the person feels pushed to act by forces outside himself, to obtain a reward, to avoid punishment or out of duty; the introjected motivation is cantered on the sense of self-control – we act to avoid guilt and anxiety; in the identified actions, even unpleasant actions are carried out in themselves because the importance of the underlying reasons is understood; in the integrated one, the values and reasons for that behaviour are understood and shared; finally, in the intrinsic, the subject undertakes an action because it is interesting in itself. According to the researchers, intrinsic motivation is the one that allows you to reach the set goals faster and more effectively. It allows you to feel independent in organizing your training plan through the effective and efficient use of the previously reported technologies, so as to maintain the benefits of constant training over the long term. If autonomous individuals turn out to be more creative, cognitively flexible, satisfied, with greater self-esteem, full of positive emotions, self-confident, then inevitably, their physical and psychological well-being will be positively affected. If intrinsic motivation is lacking, in addition to resorting to technological devices with motivational programs, it is possible to resort to emotional support in the context of physical exercise (Amprasi, et al., 2021). Emotional intelligence is not only a fundamental component for establishing valid interpersonal relationships between individuals but also a preponderant element in helping them become acquainted. Goleman defined it as: "the ability to motivate oneself, persist in pursuing a goal despite frustrations, to control impulses and postpone gratification, to modulate one's moods, avoiding that suffering prevents us from thinking, to be empathetic and to hope". The element of self-motivation and empathy appear to be predominant in this definition. According to Gardner, as interpersonal and intrapersonal intelligence are interdependent, a person will be able to know and improve himself only by relating to other individuals, consolidating these intersubjectively valid and meaningful relationships with them. It is for these reasons that concrete emotional supports are relevant and necessary in the context of research and the achievement of physical well-being, such as a coach, friend, partner and the like. The professional figure who is most concerned with emotionally motivating amateur and professional athletes is the sports psychologist. The sports psychologist provides the athlete with psycho-emotional support that allows him to improve his performance, combining the indispensable physical training and the improvement of his athletic skills with the use of techniques that work on the psychological dimension to achieve better management energies and emotions in a training and sports competition situation. This work takes place through the analysis of the personality aspects, thoughts and emotional experiences that characterize the athlete and which could prove to be an obstacle to competitive activity as well as through the use of spe-

cific mental training techniques. Many literature studies show how anxiety can be the enemy of competitive sports performance and can negatively affect the results. Anxiety is an emotional state that can be perceived as unpleasant and that prepares the body for a threat, although it is not real or corresponding to the subjectively perceived level of danger. During the state of anxiety, a massive activation of the sympathetic nervous system occurs, which causes a series of physical, biochemical and endocrine alterations, which in turn contribute to an early exhaustion of the athlete's physical and mental resources (Munafò, 2020). Similarly, other emotions such as anger can be configured as dysfunctional in a competitive athlete and affect their performance. In this regard, it has been amply demonstrated in the literature that the techniques used by sport psychology allow athletes to recognize their habitual ways of thinking and the emotions connected to them and to learn to modify and manage them. To monitor the physical conditions of athletes, the use of cutting-edge technologies such as those listed in the first part of the report such as WEHMIX is certainly useful and indispensable. Technologies applied to physical well-being are currently also reflected in feedback rewards. It is a behavioural approach applied to the sports field. Following the achievement of the sporting goal requested by the coach or the motivator, the person or athlete receives a prize so as to encourage the onset of that behaviour just put in place, making it more frequent in the future. The subject may be passive within the relationship between himself and his mentor, but in reality, this approach is only used initially. Subsequently, the coach will implement other motivational strategies as these techniques are effective in the short term. Over time, the motivational methodologies will evolve, guaranteeing its recipient new stimuli every time. Predominantly, the athlete will see new functional solicitations appear to motivate him not only from an extrinsic point of view but also aimed at intrinsically motivating him.

Conclusions

To positively affect one's motivation, even in the absence of a coach, it is useful to rely on self-monitoring tools such as smartphones or smartwatches, which are useful for quantifying aspects of one's life such as the number of steps taken, the hours of sleep and the food ingested during throughout the day. It is also useful to use apps that allow you to share results on online communities (e.g. WEHMIX, Runtastic) or on social networks (Vinagre, et al., 2021). Tools such as smartwatches help monitor one's progress by inducing the user to lead a healthier lifestyle by leveraging their intrinsic motivation. Obviously, self-monitoring must not be a tool to punish yourself for a result not achieved during the day but must represent a way to be pleased with the objectives achieved. From a psychological perspective, these tools allow you to quantify yourself and therefore be more aware of how your physical conditions are improving. This approach to sport and psychophysical well-being allows you to have greater self-awareness and self-control over your life, thereby limiting, thanks to prevention, the chances of encountering chronic degenerative diseases. To do so, it is useful to rely on experts or communities of users with whom to share the results measured through the use of technologies as well as apps. Now, we need to ask ourselves what the future of sport is and how the relationship with technologies will evolve in the future.

Therefore, since immersive virtual reality provides numerous advantages for learning and executive functions, it would be appropriate to uncover prejudice,

mistrust and indifference towards the new frontiers of teaching, filling the gaps in our educational system and opening up the possibility for teachers, educators and coaches to renew sports teaching in the school context, in order to motivate children who are hesitant, have low self-esteem, are overweight or avoid or are indifferent to physical education (Olivieri, 2016).

These strategies have considerable technological potential to reorganize teaching management in an effective, competent and inclusive way. On the other hand, it is not enough to be competent from the point of view of athletic performance to make sporting activity educational – it is also necessary to be competent in didactic planning with an educational intentionality and taking note of a paradigmatic change in learning processes, which is inserted in the wake of a nascent cyberculture.

In addition to the bold proposal to include digital technologies pertaining to the extracurricular sphere, in the school reality, a possible principle of innovation, useful for maximizing the benefits of physical education, can derive from the use of ICT by implementing devices (e.g. PCs, IWB, tablets, notebooks and the most common smartphones). Schools should be equipped with these alongside auxiliary programs for the personalization of the exercises and to support the theoretical explanation of the motor activity served up along with demonstration programs, which will be useful for guiding the teacher and students in the correct execution of the movements.

Furthermore, the teacher-designer, thanks to the Web (which is in fact a concrete possibility: fast and accessible to anyone), can carry out some digital initiatives, such as: electronic dossiers shared with the class group to upload multiple materials, presenting content in an original way and collecting opinions and feedback from students about the planned/completed physical activity session (a way to streamline communication and frame the general situation of the class in order to promote a high-quality, interesting and motivating training offer). A horizontal online forum between several schools can also be incorporated to exchange points of view and information but above all, to make sports teaching interactive and flexible through a format in which a vertical and univocal teaching methodology is marginalized and each pupil becomes a promoter of ideas and an active builder of their knowledge, sharing their results on the platform. Learning therefore becomes open, expanded, collaborative and flexible (Lipoma, 2016).

Everything suggests that it will be possible to guarantee physical well-being towards the population in a dual mode, i.e., real and virtual. It will not be essential to go to the gym to improve one's sports performances. In fact, more and more technological devices are used, increasingly accessible to consumers, capable of ensuring the execution of real targeted training using virtual reality. The advantages of virtual sports are many, such as the reduction of costs, risks, and injuries. Moreover, the athletic gesture and the physical condition of the user become clean, linear, measurable and easy to analyse. Other advantages of virtual sport are economic savings, the convenience of not necessarily having to go to sports facilities to exercise and the ability to train the mind to manage their emotions as well as their body. A final benefit is certainly the ability to collect data in a simpler and more effective way to be cross-referenced with those obtained in the field, so as to study new training programs aimed at improving one's sports performances. Institutions have among the future objectives that of guaranteeing greater psychophysical well-being to the population. Encouraging sporting activity among people is certainly an effective and useful solution to prevent and reduce the onset of chronic degenerative diseases. Technologies applied to sport are es-

sential to achieve this goal. Being aware of all this will surely lead us towards a better future.

References

Alhadad, S. A., & Aboo, O. G. (2018). Application of virtual reality technology in sport skill. *International Journal of Academic Management Science Research*, 2(12), 31-40.

Amprasi, E., Vernadakis, N., Zetou, E., & Antoniou, P. (2021) Effect of a full immersive virtual reality intervention on selective attention in children. *International Journal of Instruction*, *15*(1), 565-582.

Avila, S. (2020). Mindfulness Meditation: Benefits to Meditation & Basic Practice Techniques. *Faculty Scholarship and Creative Works*. 913.

Bates, S., Greene, D. & O'Quinn, L. (2021). Virtual Sport-Based Positive Youth Development During the COVID-19 Pandemic. *Child Adolesc Soc Work J* 38, 437–448.

Bianca, B. (2021). *Mindfulness-Based Stress Reduction: Guided Meditation in Daily Life*. ProQuest Dissertations Publishing.

Cao, L., Peng, C., & Dong, Y. (2021). Ellic's Exercise Class: promoting physical activities during exergaming with immersive virtual reality. *Virtual Reality*, *25*(3), 597-612.

Capodieci, A., Gola, M. L., Cornoldi, C., & Re, A. M. (2018). Effects of a working memory training program in preschoolers with symptoms of attention-deficit/hyperactivity disorder. *Journal of clinical and experimental neuropsychology*, *40*(1), 17-29.

Chiapasco E., Molinengo G., Bertellino R., Gandino G. (2020). *Web (In)dipendente: il benessere e l'utilizzo delle nuove tecnologie tra i più giovani – Uno sguardo ai dati su tempo trascorso online, sonno e attività fisica".* Milano. State of Mind.

Correale L., Vandoni M., Marin L., Codrons E. (2015). *Exergames: videogiochi interattivi per attività fisica e riabilitazione*. Pavia: OrthoAcademy.

De la Hoz, A., Cubero, J., Melo, L., Durán-Vinagre, M. A., & Sánchez, S. (2021). Analysis of Digital Literacy in Health through Active University Teaching. *International Journal of Environmental Research and Public Health*, *18*(12), 6674.

Di Maglie, A. (2020, August). Gestione delle emozioni e benessere psicofisico: il ruolo dell'educazione motoria e della pratica dell'attività fisico-sportiva. In *Le emozioni. Atti del Workshop 2019* (pp. 11-24).

Eaves, D. L., Breslin, G., Van Schaik, P., Robinson, E., & Spears, I. R. (2011). The short-term effects of real-time virtual reality feedback on motor learning in dance. *Presence: Teleoperators and Virtual Environments*, *20*(1), 62-77.

Fluet, G. G., Patel, J., Qiu, Q., Yarossi, M., Massood, S., Adamovich, S. V., ... & Merians, A. S. (2017). Motor skill changes and neurophysiologic adaptation to recovery-oriented virtual rehabilitation of hand function in a person with subacute stroke: a case study. *Disability and rehabilitation*, *39*(15), 1524-1531.

Freina, L., & Ott, M. (2015, April). A literature review on immersive virtual reality in education: state of the art and perspectives. In *The international scientific conference elearning and software for education* (Vol. 1, No. 133, pp. 10-1007).

Lipoma, M. (2016). Verso i nuovi significati dell'educazione motoria e fisica. *FORMAZIONE & INSEGNAMENTO. Rivista internazionale di Scienze dell'educazione e della formazione*, *14*(1), 7-10.

Lucca F., Como E. (2018). *Improving the Impact of Wearable Devices in Health Promotion and Wellbeing: the WEHMIX Project*. Roma: Etelemed.

Mirra M., & Aguoli C. (2021). *Tecnologia digitale e benessere della persona: una storia complessa di vantaggi e svantaggi*. Roma: Istituto Superiore di Sanità.

Munafò, C. (2020). Le tecnologie dell'informazione in Educazione fisica. *Edicare.it,* 20, 1, 5-11.

Olivieri, D. (2016). Mente-corpo, cervello, educazione: L'educazione fisica nell'ottica delle neuroscienze. *FORMAZIONE & INSEGNAMENTO. Rivista internazionale di Scienze dell'educazione e della formazione*, *14*(1), 89-106.

Parlebas, P. (2016). Jeux traditionnels, sports et patrimoine culturel: cultures et éducation. *Jeux traditionnels, sports et patrimoine culturel*, 1-316.
Sgrò, F., Barresi, M., Pignato, S., & Lipoma, M. (2017). The use of exergames in physical education to improve the proficiency level of balance skills in children. *Italian Journal of Educational Research*, *19*, 139-152.
Vinagre, M. Á. D., Albano, V. M. L., Herrera, S. S., & Molina, S. F. (2021). Motivación y TIC como reguladores de la actividad física en adolescentes: una revisión sistemática (Motivation and ICT as regulators of physical activity in teenagers: a systematic review). *Retos*, *42*, 785-797.