Teaching and Learning with Mobile Devices in the 21st Century Digital World: Benefits and Challenges

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Abstract

Mobile devices have introduced a new generation of educational tools that afford creative pedagogical application and instant access to a vast wealth of digital resources, holding significant potential for transforming modern learning paradigms. While both educators and students exhibit highly positive attitudes toward these technologies, their integration is simultaneously accompanied by several institutional and technical obstacles. This paper comprehensively examines the multi-faceted benefits and challenges of incorporating mobile devices into contemporary learning and teaching environments. The empirical findings clearly indicate that teachers and students remain highly optimistic about the pedagogical utility and influence of these devices, specifically highlighting improvements in student motivation, communication, collaborative learning, and independent research capabilities. Ultimately, the study concludes that providing adequate professional development, continuous technical training, and institutional support can effectively mitigate the challenges faced. By addressing these barriers, educational institutions can fully leverage mobile technology to foster dynamic, highly interactive, and sustainable learner engagement.

Keywords: Mobile learning; Educational technology; Student motivation; Collaborative learning; Professional development; Pedagogical challenges

Introduction

Learning in the 21st century is omnipresent with computer and technology and is gaining momentous in the lives of the young and becoming a part of education at schools. Student use technology on a daily basis and this has an impact on their education. Technology used effectively in the classroom enables students to be innovative while developing new skills and provides students with futuristic information. (Saxena, 2013). In recent time, the increase in use of technology is shifting traditional teaching methods in the classroom by facilitating learning in new ways. Mobile learning is the use of mobile technology to facilitate learning anytime and anywhere.

According to a UNESCO report (2013), mobile devices include any portable, connected technology, such as basic mobile phones, smartphones, e-readers, netbooks, tablets, iPads and computers. Marc (2001) points out that today students have not just changed incrementally when compared to those of the past. They are the first generation to grow up with electric devices of new technology. He adds that they have been using videogames, video cams, digital music players, cell phones, computers, and all other toys and tools of the digital age almost from their birth and are an essential part of their lives. He further says that today, mobile learning is a need but not a want. It is believed that by allowing students to use mobile devices in the classroom, motivation to learn and to achieve increases (Kunzler, 2011). Hepple (1998) pointed out that just in the development of technology where these devices are becoming a reality. However, it is yet understood how learning and teaching will change with the access and use of these devices. Without such understanding, we are left with an insufficient analysis that creates the conditions for ill-informed policy decisions at educational institutes. It is of vital importance for teachers to augment or change the way they teach in order to entirely educate students and prepare them for scientific and technological global competitiveness for the 21st century.

The study addresses the benefits and challenges presented by the implementation of mobile devices in classrooms for teaching and learning at school. Though still in the initial stage, it is essential to highlight the challenges hampering systemic change. According to Alberta (2011), mobile devices not only eradicate many of the access issues but also reduce the need for teacher expertise and provide evidence of enriched learning instantly. As with the implementation of any new technology in education, there are challenges and mismatches in the classroom. The purpose of this study is to look at the benefits of mobile devices in education. It further looks into the challenges to the school, teachers and students in its implementation with suggestions.

Benefits of Tablets for Teaching and Learning

Many schools are now moving towards mobile learning in the classroom because of the new electronic devices that offer portability and ease of use on a budget. The new electronic devices include Netbooks, iPads, cell phones, iPods, e-readers and even PDAs. Recent research on use of various mobile devices in classrooms have revealed positive learning outcomes for its use in classroom.

Students are generally positive in using mobile devices for learning, which is essential for 21st century education (Wylie, n.d.). These devices enable students to control their individual learning and allow learners to switch learning contexts conveniently from formal to informal or personal to social. It keeps students engaged, attentive and motivated and allows interaction with the devices. Teachers also benefit from the use of these devices. There is evidence that mobile devices have encouraged independent learning making it easy for teachers to differentiate individual student needs and share resources with students and among each other.

For students, mobile devices are easy to use and attractive. These devices have larger screens, variety of apps, audio and video recording software, higher processing and battery power. Research on tablet use and adoption reports that electronic devices have a positive impact on students' engagement with learning (Mango, 2015). The research showed that students tend to spend more time and effort in learning tasks that are of interest to them. Clark and Lucking (n.d.) findings showed increased interest, creativity, enthusiasm, engagement, motivation, independence and self-regulation, and improved productivity in students. Doing activities and discussions facilitated by the mobile device, students find learning more fun as compared to a typical lecture-based classroom (Morrone et al, 2012).

When tablets and iPads are used in classrooms, they have had a profound impact on teaching and learning according to the research by Nishizaki, (2015). The research also showed that relationship in teaching and learning in the classroom changes and becomes more student centred and student friendly allowing for more creativity of the student. The numerous apps available allow students to work independently, in groups and as part of the whole class, developing a range of knowledge and skills. With an increase in the use of devices, creative processes are possible as the boundaries between formal and informal learning blurs. There is emerging evidence to suggest that apps have a significant potential to support the learning process (Shuler, 2009).

Teachers can create interactive presentations, which include students' observations and comments. Teachers can give lessons, monitor progress and stay organized. Simple-to-use and easy to create presentations with stunning animations and effects. Productivity applications help students and teachers put together professional-looking documents, presentations, and spreadsheets no matter where they are. Teachers' can directly write notes using these mobile devices during interactive discussion and these can be displayed on a projected screen for students. These notes can be saved, modified, uploaded and can be helpful to students who miss anything. Students can track their assignments, take notes, and study for finals using the notes.

Tablets and iPads help students feel more confident in their learning after participating in technology-driven activities by promoting active learning. Teachers could engage students in online discussion by linking all computers. The students can then take part in the discussion by writing on the screen. The mobile devices have the capacity to connect student and instructor and create more active discussions and more constructive reflection (Morrone, 2012), that includes teacher-teacher, student-student, teacher-student, and student- teacher, what they are discovering is possible with the device. With a device, the classroom is always at the students and teachers fingertips with thousands of educational apps available to download.

Mobile devices help forge closer connections between student and teacher. Both teachers and students have learned and developed effectively through exploration and by wanting to share knowledge with each other (Burden et al, 2012). Teachers,

students and parents report that the multiple communication features, routine availability and easy accessibility of tablets in the classroom and in students' homes make communication between teachers and students, and school and home easier and routine. Positive evidence from parents such as: increased engagement and interest in learning, gaining knowledge and technology skills, more time spent on homework and more opportunity to make learning relevant and authentic. Parents' state that home-school communication improves with the introduction of mobile devices and lighter school bags is a major benefit.

The portability of mobile devices provides users with access to a broader and greater flexible source of learning materials than what is offered in current classroom settings. In addition, it can be used anywhere, in physical education, music, dance or even in the swimming lesson. With over thousands of apps available to download, teachers have access to an abundance of learning materials for use on mobile devices such as the tablet. The teacher can easily update the student's data even when outside class that is without going to the desk or school. Tablets and iPad are fitted with sensors, cameras, microphones, accelerometer, touch screen, on-screen typing, Voiceover and Talkback. These features have made these devices a popular device for teaching and learning for students of special needs such as students with autism or speech disorder, motor skills impairments, attention deficit hyperactivity disorder, dyslexia and visual impairment. The touch screen enables them to access tablet effectively specially the student with motor skill impairments and voice output offers advantage to autism or speech disorder students. Mobile devices contribute to the development of skills and connect students with and without disabilities (Dwight, 2013).

Tablets and iPads have been overestimated as 'revolutionary' devices that hold great potential for transforming learning (Goodwin, 2012). One of the chief benefits of these mobile devices is that they enable learning anywhere, anytime. This allows a shift away from the traditional model where the classroom is the central place of learning driven by the teacher and limited to instruction within the school day. In deploying mobile devices, the teacher is no longer at the center of the learning process and the instructional time can surpass the school day.

The use of mobile devices provides many positive outcomes for students, staff, and the community. It not only improves writing skills and gravity of students' research but also increases student interest in learning and ownership of the learning process. There are reductions in lecture/presentation instruction and an increase in project based learning activities.

Challenges

In this digital era, more and more schools in many countries are taking advantage of these new mobile devices that offer portability and ease of use. Although the use technology in education is remarkable and has a positive trend, there is a need for

concern, as there are several obstacles that restrain the integration of technology (Vrasidas, Kyriacou, 2008). The existing process needs to be reassessed and new methods may have to be implemented to be used in classrooms. The approach of throwing these devices into classrooms to see what happens is bad and definitely will have negative consequences. Although the students are in favour of mobile devices, they too have concerns. However, there are some concerns on the use of mobile devices in education raised by students, teachers and parents, which are discussed below.

Technology is developing at a rapid pace and it is an ongoing process. Traxler (2010) considers that devices owned by students are not designed for education use and are poorly suited for learning. Initially tablets and similar devices were developed for personal use but of late, they are designed for educational purpose. Innovative technology is developing at a rapid pace and a number of apps for learning and teaching purpose are being introduced. The management experience some stress in taking decisions in choosing the apps that are best for learning and teaching. As Melhuish and Falloon (2010) noted that "for an application to be a part of an individual's learning pathway they must be pedagogically sound in design .....rather than focusing solely on content, engagement or edutainment."

In this era of digital technology, most children are immersed in digital technology. Homes are flooded with devices like smart phones, tablets, Xbox etc. These children spend most of their time playing games and watching movies and it has become a sedentary past time. However not all children have access to modern technology at home not only in developing countries but also in developed countries. Even if the developing countries introduced digital technology in educational institutions, it is only limited to urban regions while the rural and poor people continue to lag behind, due to lack of investment, infrastructure and skilled teachers. The tablets are expensive to purchase and the cost of maintenance is even higher.

Karsenti, & Fievez (2013) stated that students spend 76% of their time on using iPads outside the classroom on social activities, amusement and other recreation. Although students feel that use of tablet for learning would not intimidate them, as it is an omnipresent constituent of their daily activities; yet even the tech-savvy students may consume more time for learning activities until they are familiarized with the device. Not being competent in the use of mobile devices may frustrate them and they might not want to explore the capabilities. Majority of mobile devices used for education seemed to be messy and poorly executed. When students lose their confidence, they might have a negative outlook on education. It is observed that the students find it easier to use gaming applications than education apps.

Mobile devices when used inappropriately by students in classroom can be a source of distraction. Parents do not trust that their young children were responsible in their use and felt possible danger. Students find creative ways to do something on these devices than follow the teacher's instructions. With access to internet, their attention

is diverted to gaming sites and social networking functions. Distraction is a big challenge to teachers. According to the study in Quebec, Canada 99% of students, using tablets say that they find it distracting in class (Karsenti, & Fievez 2013). Management in educational institutions have to take responsibility to block certain applications or websites; and teachers need to move around the class to control and monitor the use of such devices by students. In addition, they could create a place and time in the school for social networking than prohibiting.

Tablets are more fragile than computers; parents and teachers are concerned about the damage. In addition, these gadgets are expensive and when dropped or misplaced the loss is quite big as they are costly devices. There is also possibility of theft of the devices at school. Parents concern is how this could be replaced. Clarke & Svanaes (2012) suggested that insurance could replace or repair the devices with some implications if the student broke more than one or two devices.

Reading a large amount of text on the small screen of mobile devices can be difficult and can cause eye strain (Shuler, 2009). There are a great variety of digital books available but schools have very limited access and some are also difficult to use. Schools should provide students with the link to online books. Some governments have urged schools to speed up the transition to digital textbook so that in the next few years every student in America should have a digital textbook (Torres and Lofholm 2013). A small number of students use digital books in middle and high school in America. In the future digital textbooks will replace the traditional paper textbooks, which will be lighter. Initially for schools' cost of investment would be high but, in the end, they would be able to save a considerable amount of money. Tablets are used in schools in ever-increasing numbers, as prices come down in a competitive market, and with the added attraction of over 100, 000 free or low-cost educational apps, and the arrival of tablets specially designed for schools.

It is observed that tablets do not have the required features in a single application. They look to be for receiving information than inputting. This is one of the major drawbacks of this device. Some students find it difficult to write lengthy text responses on the table due to lack of keyboards. Use of separate keyboards debilitate better power and reduce portability. Although it has an onscreen keyboard but when used, the view area becomes smaller and peculiar.

Morrone et al (2011) found that use of tablets for learning and teaching requires advanced planning and devotion of more time monitoring and supervising student's tablets explorations. When digital technology is introduced for learning and teaching, instructors have to quickly adapt and always have backup plans to face disruptions and distractions. It is also found that students adept and are faster compared to teachers. This is a sign that changes for adoption success are thin. Some teachers have found use of tablets for teaching and learning challenging, and some found the need for training on technical advices, lists of useful application, discussion of pedagogy and sufficient time to get used to the device. In addition, some teachers at school have

shown reluctance to adopt to this new technology and have touted as transformative devices.

For use of tablets for teaching and learning at school requires internet connectivity with a proxy server. Internet is required to export response and other work created by students on their devices. At the same time, schools must restrict internet access to avoid inappropriate use. Setting up devices and account user names and passwords for individual students consumes school time of management, which is a probable barrier. Schools also have to consider adequacy of wireless network required for portability of the device. The use of device in classrooms need internet connectivity, for which students have to log in and out each time they use. Teachers have reported that they sometimes face disruption in their teaching plan due to bad network or limited range of the wireless network.

Conclusion

Conclusions drawn show that the benefits overshadow the challenges. What is evident from the discussion is with proper training to teachers, supervision of students and awareness of mobile learning; educational institutes will soon be able to make rapid strides. Teachers deal with substantial challenges but when provided with adequate training and support the challenges are fewer. Using mobile devices allows students to extend learning beyond the classroom walls, says Harward's Dede. In addition, students are highly engaged and are able to demonstrate unique and creative ways to respond to the use of technology that offers some distinctive affordances to users. It is important to remember that digital technology should enhance curricular goals and support student learning in new and transformative ways (Hutchison & Reinking 2011). Educational institutions need to take note of this, and look for safe, productive ways to integrate mobile learning devices into our curriculums. There has been very little research done on mobile learning and there is lot of scope for further research especially in evaluation and assessment.

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Relationship Between Strength Skills Performance and Speed Running Performance

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Abstract

Strength is one of the most important physical qualities to train in the post-pubertal phase of athlete development. This physical quality is among the trinomial of the most important physical qualities such as speed and endurance. The relationship between these motor skills affects the development of the athlete's physical qualities and locomotor pattern referring to the intensity and duration of the action. Normation of loads in strength training remains one of the main points of sports training planning to impact neuromuscular adaptations. The production of force and the ways of its generation depend on the norming of exercise loads, where the effect of the loads through exercises will affect the improvement of the athlete's abilities in relation to other physical skills. The aim of this study was to compare the norming of different strength training loads as a stimulating factor in improving speed running performance. To gather as much as possible scientific data, we used "Jab Ref" as a research sector focusing more on navigating Medline, Google Scholar, and Inspire options that this program contains. Without hesitation, the findings of all studies are consistent in showing that the components of strength are direct and important indicators that affect the increase in strength indicators manifested in different ways, where these indicators have a direct correlation with running speed in all neuro-motor parameters of the athlete.

Keywords: strength quality, speed, training, performance, relationship, loads

Introduction

Continuous improvement of athletic sports record results in all disciplines shows that at the same time estimates for the maximum limits of human performance are always relative, it is seen as a subject of study for continuous improvements. Developing strength and power we must improve these as the primary motor skills. As the basic requirements for strength physical skill development are necessary to select the most

adequate and efficient training programs. To develop strength in an adequate manner we must follow methodological principles that are focused on training muscles regime. According to Verkhoshansky different training methods have been studied to develop the exit power of muscle groups focusing on the development of muscular hypertrophy and adaptation of the specific neuro-motor system. Several coaches during their strategy training process regarding running speed improvements are focused more on strength, power, and speed training because these skill parameters are products of the same functional system and dependent parameters on each other. (Delecluse C., 1997) notes that the rate of force development displayed on maximum percentage voluntary isometric contractions rating percentage loads on the maximum of 1 repetition. According to Chestnut J. L., & Docherty D (1999), the minimum threshold on rating strength loads is 66% of 1 RM which is called the critical threshold for the development of isometric and isotonic strength. Important in rating strength loads is the duration of each muscle voluntary contraction in seconds or in hundredths of a second (Delecluse C., 1997). According to John B., Cronin & Keir T. Hansen (2005), rating training loads on 3 repetitions of 1RM have shown a nonsignificant correlation at the strength performance improvement. While power was training by weight depth squats (30 kg) and consecutive depth jump shows correlations in height jump, relative power, and improvement in speed running performance.

The attached study (John B et al 2005) on rating strength training loads (McBride et al 2002) reported strength training on 8 weeks, 1 RP 80% 1RM using squat exercises showed no significant improvement in jump height and speed performance. On rating the number of repetitions and exercise intensity Zatsiorsky states that enhance strength performance are recommended training programs that estimate the intensity of each repetition. Zatiorsky states that lifting above 90% of your 1RM leads to very slow bar speeds and low power outputs. Loads of 90% of 1RM and below are better suited to enhance the RFD (Zatsiorsky VM, 1995.) The study by (Warren B. Young., 2006). & (Harris G.R., et al 2000) focused not only on the improvement of movement structure speed running using strength exercises that mostly involve bilateral contractions of low limbs such as weighted vertical jumps, squats, and depth jumps but even on the improvement of the acceleration phase of speed running.

Force ability is one the most responsible factors in accelerating performance. This ability of the force to improve acceleration is related to the achievement of high-level muscle strength productions. The rate of force development correlates with the ability to accelerate and achieve optimal speed in accordance with the cinematic movement of sports discipline. To achieve optimal parameters of force ability Schimidtbleicher recommended explosive maximal intensity exercises that increase the rate of strength development. (Schimidtbleicher D., (1992).

Relationship between increasing strength skills performance and speed running performance Wilson. Gj has shown significant statistical value on the improvement of

40m sprint with 8 weeks of squat training. Wilson. Gj, emphasize that a 2.2% of improvement in speed running required a 21% improvement of strength in the squat. (Wilson GJ et al (1996).

Many training methods were studied to determine the most suitable methods for the improvement of running speed and running phases. According to him enhanced speed running performance required high-resistance (HR) methods. These methods concluded that high-intensity loads with few repetitions where the stimulus intensity evokes enhancement of the rate of strength and power. Training methods termed high-velocity training (HV) included low-intensity loads with numerous numbers of repetitions where the stimulus intensity evokes enhancement of speed and velocity. These methods include the use of parachutes, weight vests, and sled pull that evokes improvement of explosiveness, quick acceleration, and first-step quickness. Generally recommended for maximal skill carryover light loads (10% of body weight), because they allow for technique, joint velocities, and loads similar to that for competition. However, many coaches and trainers use loads much higher in order for further overload to develop leg strength specific to speed skills, such as acceleration. (Vives, D., & Roberts, J. (2005).

With the use of ballistic movements, movements in which the weight can be released, power and acceleration are enhanced throughout the entire ROM. Ballistic exercises, Olympic lifts, plyometrics, jump squats, and bench throws are therefore far superior to speed reps for power development and allow the athlete to accelerate throughout the entire ROM. Maximal peak power outputs for the jump squat are seen with loads between 10% and 45% of 1RM (Wilson G.J et al 1993) (Newton RU et al 1996) (Clark RA 2008)

The aim of the study: is to highlight a kinematic analysis of physical and functional performance by emphasizing the strength and power results with their relationships with the speed performance results.

Research Methods

The research method that we used was JabRef 2.10. It is an open-source bibliography reference manager by which everyone can provide data in an easy way from online scientific databases. Because of this, we decided to use this methodology to gather as much as possible scientific information which was directly related to the goal of this review.

Literature was obtained by means of the Medline, Google Scholar, and Inspire search engines and was prompted by the following keywords: strength quality, speed, training, performance, relationship, and loads. Despite the fact that Jab Ref "reference manager" showed more than about 100 articles, we selected only 23 of them because they were directly related to our study aim.

Analysis of Literature Review

Relationship of strength quality components and their impact on running speed.

Strength training is not only focused on the improvement of strength physical skills but also it is more important transferring this performance on speed physical skills and for a consequence of this important training task many researchers have completed their study on the most efficient training methods for improvement of running speed performance.

Speed running athletes´ training in all technical phases is very important and correlated between them. An athlete can possess the acceleration phase and rich maximal speed but can he hold maximal speed for as long as he can?

Starting faze is based on speed reaction time that includes phases between hearing the start-up signal to reaction time. Studies have determined reaction time skills as neural skills and genetically defined but their improvement from training is insignificant. (Young WB, 2006).

This study is focused more on the practical view of the correlation between strength and speed components as physical skills and on the most effective approaches used to improve strength components that affect speed performance. Maximal strength muscular performance and maximal speed performance are made by the same manipulative training parameters. (Zatsiorsky V. M & Kraemer J.W .2006).

Treatment with the training of maximal strength parameters induces at the same time improvement of power, muscular hypertrophy, and muscle perimeter. Power is the production of strength and speed in consequence of this all the changes in strength induce muscular power production. On the above facts, treatment parameters with training show correlations between them (Schmidtbleicher D., 1992). (Hakkinen K., 1994).

According to Verkhoshansky development of strength in the right way must follow the methodological rules according to the muscle's regime during motor activity.

Various training methods have been studied to develop the power output from these muscle groups. Some of the methods focus on the development of muscular hypertrophy and some others on the specific adaptation of the neuromotor system.

Many trainers in creating strategies for sprint training processes keep in main focus that strength, power, and speed are essentially interdependent because they are all the product of the same functional systems.

In speed sports training it is very important to maintain a balance in the training loads of the specific primary and secondary components. To achieve these trainers should consider specific strength training according to individual characteristics, based on performance capacity and technical stages of running. (Delecluse C., 1997).

The relationship between strength and performance indicators in sprinting is different according to the stages of running. Measurements performed on muscle contraction (concentric, stretch-shortening cycle (SSC)) and isometric, showed that the parameters of absolute maximum force were more related to the speed of distance running than to the starting ability. (Young, W. B et al 1995)

The type of contraction (stretch-shortening cycle or SSC) is important in the production of muscle strength, emphasizing that during the execution of this contraction the muscle-tendon connection is heavily loaded, increasing and transmitting the production of energy to the limbs. During this phase (SSC) a considerable amount of energy is deposited to be used for the production of force during the exchange of contractions from concentric to eccentric and vice versa. This cycle of contractions is very important in the manifestation of strength. It is very important to standardize the exercises that are characterized by this cycle (SSC) where researchers recommend plyometric exercises as the best form of development of this cycle (SSC).

Plyometric training, including one-sided exercises and horizontal movement of the whole body, causes a significant increase in the acceleration performance in the sprint, emphasizing the importance of the movement pattern and the speed of muscle contraction (Paavo V. Komi., 2000), (Chimera et al 2004) (John B., Cronin, and Keir T. Hansen., (2005), (C. Boreham 2006).

The importance of finding the minimum limit to normalize force loads is important for trainers. Recommendations refer to loads that are normalized as a percentage of 1 repetition or with the duration of each single muscle contraction in seconds or in hundreds of seconds. Load reduction to 66% of 1 repetition is classified as the critical threshold for the development of isometric and isotonic force. (Chestnut J. L., & Docherty D., 1999).

Referring to load norming for strength and power exercises, according to the study of John B., Cronin & Keir T. Hansen, who in their study norming squat jump with weight 30 kg and depth jumps, results showed a correlation with the height of the jump, relative strength, and in improving performance in sprinting. Joining the study of John B et al, on load norming for strength (McBride et al 2002) reported that subjects who trained for 8 weeks using 80% of the maximum of 1 repetition in the reclining, showed that it was not much significant in improving jump height or speed performance. (John B., Cronin & Keir T. Hansen., 2005) (McBride et al 2002)

On the regulation of the number of repetitions and the intensity of the exercise, Zatsiorsky shows that in order to increase the performance of the power, he recommends programs that promote the quality of each repetition. Zatiorsky states that lifting above 90% of your 1RM leads to very slow bar speeds and low power outputs. Loads of 90% of 1RM and below are better suited to enhance the RFD (Zatsiorsky VM, 1995.) in the other side based on Newton et al 1996 studies speed

repetitions performed with 30% of 1RM will not improve the RFD (Newton et al 1996)

Consequently, the study of the rate of force development related to that strength is a directly responsible indicator of an athlete's accelerating ability. This can be argued with the fact that the faster it is produced or the higher level of muscle strength production is achieved in relation to the time the faster a response acceleration occurs. As a consequence of the running functions, the rate of force development is related to the ability to accelerate and achieve the optimal speed required according to the movements of the sports disciplines.

The most recommended exercises (isometric and dynamic) which affect the rate of force development, are characterized by explosive movements with maximum intensity (Schimidtbleicher D., 1992). Where to confirm this statement are attached the facts brought by the above works.

The importance of increasing strength and power performance has been shown to have a positive correlation in increasing speed running performance where the studies of Wilson GJ et al; Harris G.R et al, showed that training for 8 weeks with squats showed statistically significant values in gaining performance in the 40-m sprint. Improved performance by 2.2% in sprinting, is related to performance improvement of 21% of strength in the squat. (Wilson GJ et al 1996), (Harris G.R et al 200).

A variety of training programs have been studied to define methodologies to improve the performance of speedrunning, one of these methods is high-resistance (HR) training. This method includes in their content loads with high intensity and a small number of repetitions where the intensity of their stimulus promotes the development of strength and power. Termed high-velocity training (HV) training methods, include low-intensity loads but with a large number of repetitions where their stimulus promotes the development of speed and velocity. Other methods include teaching types of equipment such as parachutes, weight lifting, and stuffed vests that help develop explosiveness, quick acceleration, and first-step quickness (Delecluse, C., 1995).

Several studies have shown that to enhance maximal power, athletes should train with the velocity and resistance that maximizes mechanical power output (McBride et al 2002)

To maximize power and speed and to be enhanced throughout the entire ROM, coaches recommend the use of ballistic movements, jump squats, bench throws, and plyometrics (Newton et al 1996) (Clark et al 2008.)

The optimal load to maximize power outputs in Olympic lifts are higher compared with the jump squat. Maximum power outputs in Olympic lifts occur between 60% and 80% of 1RM and are therefore perfect to develop strength-speed (N Kawamori &

G G Haff (2004). The optimal load at jump squats is a load above 60% of 1RM but poses safety concerns because of the high impact forces on landing (Kaneko et al 1983) (N Kawamori & G G Haff, 2004). Without hesitation, the findings of all studies are consistent in showing that the components of strength are direct and important indicators that affect the increase in strength indicators manifested in different ways, where these indicators have a direct correlation with running speed in all neuro-motor parameters of the athlete.

Discussion

After the review of the literature, we identified facts brought through various studies on the components that affect the increase in the ability of the speed of running, but also the importance of the rationing of training loads as a necessary requirement and influencing the performance of speed running. All studies without question have in common that the components of strength are direct and responsible indicators that influence the increase of strength indicators displayed in different ways, where these indicators have a direct correlation and relationship in all neuro-motor parameters to athletes with running speed. The strong connection that is based on the correlation I of strength quality, not only shows a positive correlation and a relationship between the two physical abilities, but it has shown that training according to the rationing of loads and different strength methods has an impact on the improvement of movement parameters according to the technical phases of running.

Studies have shown that training strength qualities in relation to performance and speed runs have improvements from their training, but these skills have a wider genetic basis than the percentage of improvement as a result of training.

For a more accurate and efficient methodology, the relevant rules must be followed according to the main regimes of muscular work that appear during movement activity.

In sports training, strength training should be extended to all its components in a specific way, since the relationship of these components changes according to the technical phases of speed running.

All training loads of strength, power, and speed are loads with high neuro-muscular intensity, which shows that the relationship of these physical qualities appears in direct correlation with one another.

The rate of maximum force loads should start at least with 70% of 1 RM to 100% of 1 RM. If 100% of the load at the maximum strength exercises with more than 1 RM, there is no improvement in the performance of the maximum force display.

The performance of speed runs is significantly improved by using exercises that include bilateral contractions of the leg muscles in vertical movement (leg extension, leg extension jumps with or without weights), which are adapted to the speed of muscle contraction in speed runs.

In order to regulate the most efficient loads for the development of strength and power, studies recommend exercises with high intensity and a small number of repetitions, while for speed training they recommend low intensity with a large number of repetitions.

From the studies, it was noticed that the most recommended exercises for improving running speed are ballistic exercises with weights, deep jumps, and Olympic lifts.

Conclusion

All of the training loads for speed, power, and strength have significant neuromuscular demands, suggesting that these physical attributes are directly related to one another. • Since the relationships between these components fluctuate depending on the technical stages of sprinting, strength training should be extended to all of its components in a specific method for sports training.

To improve running speed indicators, exercises are recommended that have a wide impact on muscle mass, especially on the relationship between agonist and antagonist muscles, olso promoting rapid muscle contraction reactions. The optimization of the exercise's volume and intensity is also to be given attention as important influencers on the effect of the exercise.

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