

PHYSICAL ACTIVITY AND EVOLUTIONARY CHANGE OF MOTOR SKILLS IN SCHOLAR AGE

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Review paper

Abstract

Reducing physical activity is a phenomenon that not only affects the adult population, but also young people since the preschool age, resulting in a change in the evolution of motor patrimony and physical efficiency. The interest in international literature is centered on obesity and loss of aerobic performance, which are the main health risk factors, while surveys of motor capacity are still very limited. The present study investigated the evolutionary tendency of motor skills, trying to extract relevant information from a series of researches in different countries around the world for an interpretative analysis of theoretical and documental results. This trend is worrying as it seems to affect the natural development of motor performance during the evolutionary age. The results of these studies reflect on the importance of a broad set of physical and coordinative efficiency, developed optimally to ensure further growth in motor performance over time. This also implies a reflection on the opportunity of early learning of technical skills that, if not supported by a broad base of capabilities, could then cause performance stagnation. In the final part of the article, operational some suggestions are proposed to pursue the objective of developing a broad base of motor skills, integrating quantitative parameters, whose modulation has direct effects on physical efficiency, and the qualitative parameters, the modulation of which serves to enrich the baggage of motor skills useful to the solution of ever-new engine tasks.

Key words: *physical inactivity, motor strength, physical efficiency, ecological and cognitive approach.*

Introduction

Physical and sporting activity positively influences the health and general well-being of the individual, has positive effects on mood, and counteracts the negative consequences of sedentary and unhealthy lifestyle (Amlani & Munir, 2014). It has now been demonstrated by several researches that daily and prolonged physical activity, from medium to strong intensity, also improves school performance (Erwin et al., 2012), the metacognitive processes (Theodosius & Papaioannou, 2006), the ability to solve motor and sports problems (Marcoux et al., 1999) and also in motor impairment disabilities (Lloyd et al., 2006) or with cognitive delay (Bouffard, 1997). The movement is fundamental for a child's physical, cognitive and social development; in addition, experiences support learning and development of fundamental movement skills (Altavilla et al., 2014). The foundations of those skills in early childhood are essential to encourage a physically active lifestyle. At an early age, gross movement skills are necessary to move, stabilize and control body and objects while exploring the environment. In the early childhood years, children begin to learn fundamental motor skills; which are composed of locomotor skills and from the control skills (Haywood & Getchell, 2005). These skills form the foundation for future movement and physical activity (Clark & Metcalfe, 2002). Always Clark and Metcalfe spoke of the "mountain of motor development" and suggested that the fundamental movement skills are a precursor to context-specific and skillful movement. Therefore, to reach the top of the motor development and be physically skillful and active, children must first acquire competency

in Fundamental Motor Skills to apply these skills in different contexts. Later in life, well developed gross movement skills help individuals to function more smoothly (Loprinzi, Frith, 2012). Once a child can grasp, throw and walk interest in the further development of more complex movement skills is reduced and more attention is given to the development of cognitive, social and emotional aspects. Motor development is basically only taken into consideration when dysfunctions or inefficient movement behavior appears (Davies, 2003). In fact, the information which is available is mostly based on the sequences of developmental change in movement patterns and can be found in literature such as Gallahue and Ozmun, 2006. The physical activity practiced of children and adolescents in structured contexts such as school and organized sports is decreasing in many European countries. The phenomenon of decreased physical activity is reflected directly not only on growing problem of overweight and obesity, but also in the overall tendency to deteriorate motor performance and physical efficiency with all negative consequences for cardiovascular and metabolic (Andersen Et al., 2006). In order to effectively promote physical activity among children, a better understanding of the influence of motor skill development on child physical activity is required, given evidence suggesting motor competence may lead to increased physical activity across the lifespan (Lloyd et al., 2014). The aim is argumentative theoretical for the part relating the review of the scientific literature on training theory and interpretive for the theoretical and documentary results.

Results

The results of a sample of U.S. preschool children (mean age 5 years), locomotor motor skills was associated with increased school-day pedometer-determined steps, but no association was observed for manipulative or perceived motor skill competence with accumulated steps (Robinson et al., 2012). In a other sample of 4-year-olds from Finland, both locomotor and gross motor skills were associated with increased objectively-determined moderate-to-vigorous physical activity and light-to-vigorous physical activity (Iivonen et al., 2013), which is in alignment with a U.S. preschool study (mean age 4 years) utilizing accelerometer-determined physical activity data (Williams et al., 2008). One of the few researches on motor coordination over the last 30 years (Dordel, 2000) suggests that in the year 2000 motor coordination of school age children tends to decrease. This phenomenon becomes significant when analyzing urban and rural populations separately, as the former shows significant delays in co-ordination development (Eggert et al., 2000). Interestingly, the thirty-year study conducted in Poland by Raczek (2002), where a steady increase in bodily indices was observed, stature, weight, etc., in contrast to the downward trend in motor performance. This analysis has highlighted a significant decrease in motor performance, in particular, attention should be paid to the involuntary tendency of coordinating skills; In fact, these latter appear to be primarily of interest to special populations, for example, to identify individual developmental coordination disorders (Wilson, 2005) or those who are interested in optimizing sports technical learning (Nieber, 2004).

Discussion and conclusion

These researches lead us to reflect on the importance of a wide-ranging physical and coordinative efficiency, developed optimally to ensure further growth in motor performance over time; They also reflect on the feasibility of early learning of technical skills that, if not alongside a broad base of capabilities, could then cause a rapid stagnation of performance. These researches lead us to reflect on the importance of a wide base of physical and coordinative efficiency, developed optimally to ensure further growth in motor performance over time; furthermore, they induce also reflect on the utility of early learning of technical skills that, if not alongside a broad base of capabilities, could then cause a rapid stagnation of performance. In order to identify valid pathways, there is a need to intensify the realization of experimental studies on physical activity in the developing age (Shepard, 2003). Such studies should focus on both quantitative and qualitative parameters of physical activity. With regard to quantitative parameters, their modulation has direct effects on physical fitness and for health, since for develop it and maintain it, is necessary that the body must be subject submit to a certain amount and labor intensity (Raiola & Tafuri, 2015).

Considering that the level of physical activity practiced in the developing age reliably predicts the level of activity in adulthood (Telama et al 2005), it is crucial to lay the foundations of a lifestyle sufficiently active since childhood to counteract trends current lack of movement (Reilly et al, 2004). Regarding the qualitative parameters of motor activity in the evolutionary age, one aspect fundamental is the variability of motor practice. On this concept there are convergences of different schools of thought on how to realize it; For example, the Ecological Approach to motor learning avoids prescribing certain variations of motion parameters to the learner, but focuses on the need to vary the degree of freedom of the motor task and the context to help the student discover and experiment, autonomously, multiple solutions (Pesce, 2002). Operationally, it is a matter of helping the young man to discover autonomously experimenting with various possible solutions of a given motor task in a given environmental context, accompanying him along a guided discovery path that begins by reducing the degree of freedom of the task and context, for then explore them until to exploit them and capitalize them to the best (Bernstein, 1967). Instead, the Cognitive Approach to Motor Learning has identified specific modalities of exercise variation that are particularly effective in optimizing motor learning. In practice, it is about prescribing to the learner varied sequences of exercises that alternate with the execution of different motive gestures, or to prescribe changes in the parameters of the execution of the individual motor gestures, such as duration, strength, type of effectors (Schmidt, Wrisberg, 2000).

Doing an integrated analysis of these two cultural approaches results in a useful combination, that both approaches form to promote the development of coordinative skills and are recommended to enhance motor skills learning. This means that the teacher who wants to successfully finalize motor learning in an evolutionary age, namely primarily motor coordination and not exclusively for sports performance; he can integrate the two approaches efficiently. In other words, the prescriptive exercising of specific executive variants in the school age allows for the structuring and refinement of engine programs, enriching motor patrimony of the student to be put to service of the heuristic process of solution of ever-new engine tasks. In fact, in the Euristical Approach, executive variability is understood as the value to be maximized in the production of motor gestures, as the index of motor creativity (Tocci et al., 2004). In addition, motor creativity, apart from its important role in motor development of the child, has the added value of being associated with positive psychological characteristics for the child's psychosocial development; Moreover, the creative didactic approach to motor activities seems to contribute significantly to the development of self-esteem. Prospective studies have linked early childhood motor competence to neurological development and future success in achievement domains (Pagani et al., 2010, Grissmer et al., 2010).

Early childhood, physical activity might drive their development of motor skill competence. Increased physical activity provides more opportunities to promote neuromotor development, which in turn promotes Fundamental Motor Skills development (Fisher et al., 2005; Okely, Booth, & Patterson, 2001). Overall, young children demonstrate various levels of motor skill competence primarily because of differences in experience.

These differences are the result of many factors including immediate environment, presence of structured physical education, socioeconomic status, parental influences, climate, etc. (Goodway & Smith, 2005; Sallis, Prochaska, & Taylor, 2000).

Therefore, it is possible to hypothesize that young children will demonstrate variable levels of physical activity and motor skill competence that are weakly related at this point in developmental time. As children transition to middle and late childhood, we hypothesize that the relationship among levels of physical activity and measures of motor skill competence will strengthen (Stodden et al., 2008).

That is, the individual and environmental constraints operating during early childhood will compound over time to result in a stronger relationship between physical activity and motor skill competence. The difficulty of teachers and sports operators engaged in motor and sports activities, for children in age scholastic, to be able to conjugate in practice the need for appropriate qualitative and quantitative standards of movement that can curb negative trends both on the front of the physical health efficiency, both on the front of motor coordination development. The problem of physical health efficiency, which decreases in children, can not be solved by translating children's models of adult fitness activities (Bazzano et al., 2007) as well as the problem of early selection and promotion of sports talent can not divert from the primary objective of the multilateral development of motor skills. We believe the information and the reflections presented in this article they can provide a basis to stimulate research on the notion that the degree of motor skill competence is a critically important, partially responsible for the health-risk behavior of physical inactivity.

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TJELESNA AKTIVNOST I EVOLUCIJSKE PROMJENE MOTORIČKIH SPOSOBNOSTI U ŠKOLSKOM UZRASTU

Sažetak

Smanjenje tjelesne aktivnosti je fenomen koji ne samo da utječe na odraslu populaciju, već i na mlade, već od predškolske dobi, što rezultira promjenom u razvoju motorne baštine i fizičke učinkovitosti. Interes u međunarodnoj publicistici usredotočen je na pretilost i gubitak aerobnih performansi, što su glavni čimbenici zdravstvenog rizika, a istraživanja motornih kapaciteta i dalje su vrlo ograničena. Ova je studija istraživala evolucijsku tendenciju motoričkih vještina, pokušavajući izdvojiti relevantne informacije iz niza istraživanja u različitim zemljama širom svijeta za interpretativnu analizu teorijskih i dokumentarnih rezultata. Taj je trend zabrinjavajući jer utječe na prirodni razvoj motoričkih performansi tijekom evolucijske dobi. Rezultati tih studija odražavaju važnost širokog raspona fizičke i koordinacijske učinkovitosti, razvijenih optimalno kako bi se osigurao daljnji rast motoričkih performansi tijekom vremena. To također podrazumijeva i razmišljanje o mogućnosti ranog učenja tehničkih vještina koje, ako ih ne podržava široka baza sposobnosti, mogu uzrokovati stagnaciju izvedbe. U završnom dijelu članka, izneseni su neki prijedlozi za postizanje cilja razvoja široke osnove motoričkih vještina, integracije kvantitativnih parametara čija modulacija ima izravan utjecaj na fizičku učinkovitost i kvalitativne parametre čemu modulacija i služi kako bi obogatila repertoar motoričkih vještina korisnih za rješavanje najnovijih motoričkih zadataka.

Ključne riječi: *tjelesna neaktivnost, motorička snaga, tjelesna učinkovitost, ekološki i kognitivni pristup*

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