

THE IMPORTANCE OF THE MOVEMENT FOR THE DEVELOPMENT OF COGNITIVE FUNCTIONS

L'IMPORTANZA DEL MOVIMENTO PER LO SVILUPPO DELLE FUNZIONI COGNITIVE

Natale Marzullo

University of Naples "Parthenope"
natale.marzullo@uniparthenope.it

Clorinda Sorrentino

Telematic University "Pegaso"
clorinda.sorrentino@unipegaso.it

Abstract

Motor activity is necessary for the growth of the child and therefore indispensable for the body and mind. Multiple studies confirm the importance of the relationship between the environment and the body, and the establishment through play of the positive relationship between the self and one's emotions, thus managing to develop one's identity and the cognitive sphere. As many researches lead us to reflect on the importance of physical activity and the positive responses that derive from movement, considered not an end in itself but as change and development.

L'attività motoria risulta essere necessaria per la crescita del bambino e quindi indispensabile per il corpo e per la mente. Molteplici studi confermano l'importanza della relazione tra l'ambiente e il corpo, e l'instaurarsi attraverso il gioco, della relazione positiva tra il sé e le proprie emozioni, riuscendo così a sviluppare la propria identità e la sfera cognitiva. Altrettante ricerche, ci inducono a riflettere sull'importanza dell'attività fisica e sulle risposte positive che derivano dal movimento, considerato non fine a se stesso ma come cambiamento e sviluppo.

Keywords

Motor Conduct, Movement, Cognitive Development, Education, Learning.

Condotta Motoria, Movimento, Sviluppo Cognitivo, Educazione, Apprendimento.

Introduction

Movement is considered the protagonist and necessary throughout one's life. In fact, "The body is the first means by which the individual experiences the environment, it is the first channel of communication between himself and others and will continue to be the privileged intermediary in the relationship with others, between the internal world and the external to itself" (Federici, et al., 2008). Therefore, a lifestyle based on motor activity, especially during the developmental age, leads to good growth and better development of cognitive skills, thus

improving learning. From the development of reflexes to procedural memory, to the processing of movement, everything leads to the synergy of cognitive functions.

The educational training process starts from the motor experience, the movement education contributes, in the growth phase, to maturation in its entirety. The motor act therefore generates cognitive processes, the use of the senses represents the first form of relationship with the environment. Body language is therefore essential for the construction of mental life and is therefore necessary and objective, to the point of representing an integral process between one's ego and the surrounding environment. Thus, the game begins to strengthen reflexes and improve movement in multilateral, polyaxial and multi-joint activities. Movement, becoming more and more functional, develops and improves motor skills more and more (Cook, et al., 2011). Through the grammar of movement, it is possible to build more and more elaborate motor actions, thus structuring a motor alphabet useful for developing solutions established on coordination, functional efficiency and neuromotor coordination. By analyzing the connection between cognitive development and motor activity, we will investigate how much and how movement can affect cognitive development and learning.

1. Motor skills

Movement is inherent in man and cannot be ignored. From the beginning of time, movement has been necessary for survival, in the act of escaping / running to defend against external attacks, in the act of walking / running to hunt and to carry out the simplest activities dictated by daily needs. With the evolution of mankind, movement has also changed, detaching itself from necessity and becoming more and more playful with the prevalence of the playful and fun aspect. However, what has always been a natural necessity of man today has ended up becoming just a small moment of the day that needs to be embedded in an increasingly sedentary life, already facilitated by any means that can facilitate constant travel (Bertagna, 2004). Movement is necessary, the evolution of the species has not designed man to make him sit still, nor to minimize his motor capacity. It is necessary to move to feel good, to ensure that our body is toned and elastic, to discharge the accumulated energies and sometimes even just for pleasure.

In highlighting an increasingly less predisposition to movement, especially in the age group between 5 and 17 years, the World Health Organization also intervened which continually reminds that children and young people included in this range should be encouraged to practice and to participate in physical activities, to support their natural development. If movement is also considered as an activity that allows you to discharge energy and allows the body to rest, it can be defined as a need to be satisfied (Maslow, 1973). The American psychologist, in the mid-twentieth century, theorized the existence of a hierarchy between some needs, which he inserted in a pyramid, Maslow's Pyramid, where the satisfaction of the basic needs (physiological needs) creates new desires in the individual, located immediately above. From this point of view, the human being continues to develop needs: for safety, for belonging, until the point is reached, or self-realization. In order to reach the upper floors of the pyramid, those located below must be satisfied since, in the face of physiological needs (thirst, hunger,

movement) or belonging (friendship, family), one will tend to feel the former more (Maslow, 1973).

2. Motor skills and development of cognitive functions

Motor activity, moving to train at a professional level or just for fun, does not cause well-being and improvements only on the physical level but also on the cognitive level. It is a fundamental support to the cognitive system in memory processes, in the organization of logical processes (Sibilio, 2005). Action, understood in the purest sense of the term, thus manages to make body space and external space a single system (Galimberti, 2003).). Movement therefore becomes the source and at the same time support of cognitive evolution, it is the basis on which the perceptive and conceptual world of the child is built, also conveyed by the senses. It is therefore necessary that this natural capacity that the human being has should not be inhibited, because it is precisely through it that the structuring of other capacities, sensory functions, language, thought, perceptions, concepts and individual and social behavior takes place and is realized. There is a direct relationship between motor development and cognitive development especially in the primary school age (Piaget, Inhelder, 1970). Academic success, homework and test performance depend on factors that are closely related to factors such as attention, concentration, memory, recognition and understanding of information. Many studies show that there is a close correlation between effective learning and the attention that is used by children in playing a game, especially when the latter is characterized by a marked motor component, since it is necessary to simultaneously activate body, mind and sensory functions. Motor games (in the kindergarten age group) and a specific sport training (for elementary school age levels and I and II grade high school) therefore represent the best way to improve students' learning levels, predispose them to a healthier and more natural lifestyle, that is, in keeping with a predisposition that man has had for millennia: to move. (Cratty, 1985). Cardiorespiratory wellbeing and good motor skills activate and develop higher cognitive abilities and more efficient academic performance in tests for attention, IQ, memory and inhibitory control and which can be linked to cognitive functions in different ways. High levels of cardiorespiratory well-being find better performance in tasks that require a high distribution of attention and predispose to a superior performance in memory tests involving hippocampal coding (Chaddock et al., 2010a) better performance in various tests than those with lower levels of well-being (Davis, Cooper, 2011). Good motor skills have therefore been linked to better performance on various cognitive tests, including tasks for IQ, attention, inhibitory control, item memory, and academic achievement (Niederer et al., 2011; Livesey, et al., 2006). Research conducted by Livesey and his collaborators stated that greater manual dexterity was attributable to shorter reaction times in the Stroop night / day task (where the test consists in making preschool children respond to the word "night", to the vision of a drawing depicting the moon with the stars and making the word "day" respond to the sight of a drawing depicting the sun (Livesey, et al., 2006). On a physiological level, the relationships between physical activity and cognition occur in the neuronal networks of the hippocampus, a structure

responsible for memory and learning in mammals (Cooke, Bliss, 2006). At a physiological level, the relationships between physical activity and cognition occur in the neuronal networks of the hippocampus, the structure responsible for memory and learning in mammals (Cooke, Bliss, 2006). The hippocampus therefore plays an essential role in the consolidation of memory. Fundamental for the functioning of the hippocampus is the long-term strengthening (LTP) which, following a high synaptic traffic, promotes synaptic efficacy. In this regard, a research has stated that in adult mice physical activity favors hippocampal LTP (Kempermann, et al., 2000) through 3 mechanisms: increase in the formation of new neurons (Van Praag, et al., 1999), increased neuronal activity in the hippocampus (Anderson, et al., 2000) and increased neuro protective factors in the hippocampus that create a favorable environment for LTP (Cotman, Berchtold, 2002). Constant and daily movement creates well-being but even more promotes healthy and correct growth, essential for both physical and psychological development, improving the social, corporeal, emotional and intellectual sphere, in order to create a harmonious and complete personality of the individual (De Pascalis, 2010). With motor activity, in addition to improving specific skills, various components of the personality and social area also improve. Movement and sport provide scenarios in which one can work on the regulation of emotions and foster relationships with peers. (Slutzky and Simpkins, 2009). Emotional control and self-esteem are strengthened, socialization skills and autonomy increase, therefore the awareness of one's own potential and limitations. You learn while having fun and develop a complete and global well-being of the person by following correct lifestyles (Farnè, 2010).

Conclusion

In light of the above, it is necessary to move. Whether it's a simple walk in the open air, a bike ride, dancing, running, training for a specific sport at a competitive level or simply for the personal pleasure of getting around, you need to do it! Any motor activity is effective for improving the well-being of the person and of the child in particular. The motor experience that the latter experiences becomes the tool that helps him to realize his potential with confidence and safety, overcoming the difficulties and risks he may encounter. Studies associate proper physical activity in the developmental age with personal fulfillment, self-esteem training and cognitive skills which favor good results even in the school field. Each motor gesture stimulates brain work by creating positive reinforcements from both a physical and a neuro-cognitive point of view. In a social environment characterized by great difficulty in educating, the responsibility is strongly felt to show all the educational value of the movement. It is necessary to fully develop the awareness of having in one's hands a privileged instrument of involvement and education starting from the youngest. It is no longer enough to proclaim, almost rhetorically, that motor activity is a great resource for physical, intellectual and moral development, we need to go further and make a series of concrete management choices that show its value. Through effective cooperation with the school environment, that of the family and the world of sport, it is possible to concretely pursue an educational, cultural, social and value benefit.

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