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Original article

COORDINATIVE QUALITIES DEVELOPMENT IN CHILDREN

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Abstract

Aim. Coordination motive is regarded as a highly complex skill psychomotor rely on other skills and has psychomotor interrelationship with motor skills and especially the skills. Report of space and objects around us is reflected in the body scheme. It is current data that are based entirely and exteroceptive sensory information. Been shown as the important role they have skin sensitivity, the kinesthetic, visual and auditory information role. The degree of coordination of movements is influenced by the level of mastery of motor skills, their level of automation, but disruptive factors or random characteristics of the environment. Psychomotor development in the important objectives pursued are: development of perceptual, sensory acuity (kinesthetic), visual and auditory memory, oculo-motor coordination. The same may be motor qualities and development of complex movements. Between motor and sensory capacities are relational links caused by the indissoluble senso-motor processes, representative of the preoperative, the operations of concrete and finally to the logical, formal.

Conclusions. A motive coordination leads to opportunity to answer whatever motive motor task complexity. Quality of response is foreshadowed by the precision movements, subject to spatial characteristics, temporal and dynamic movement.

Key words: Development, coordination, children.

Introduction

Motor coordination is regarded as a highly psychomotor complex skill that relies on other psychomotor skills and has interrelationships with motor skills and especially understanding.

Most authors consider coordination as a complex motor skill which is educated in order to improve different capacities:

- ability to adjust and manage individual movements or actions involving the entire body
- ability to control motor movement in any situation
- ability to quickly change from some actions and relationships to another's, without being interrupted continuity and ease of motor acts and actions in line with ever changing requirements of the environment (ambiance of a particular sport). Is defined as:

➤ Individual's ability to acquire and perform actions with varying degrees of difficulty directing precisely and economic movements in time and space with speed and tension necessary for full concordance with the conditions and circumstances which occurred during the performance of action. (Mitra, Mogos, 1980)

- An ability to learn very quickly new moves (the ability to learn quickly) and secondly as an ability to quickly restructure the circumstances in which motor activity changes abruptly. (Hantău, 2004)
- A complex expression of the performance capacity by quickly learning new moves and fast adaptation to various situations according to the specificity of each branch of sports or other basic motor skills and applications. (Dragnea, 1996)

Problem statement

In order to emphasize the aspect of uniformity and continuity of movement, understands through coordination "combining a number of muscle activity under a scheme of continuous motion, smooth, made under normal conditions."

Referring to the importance of coordination in the motor act performance, Nicu, notes that a good coordination is "a necessary condition in order to have a performance as good as possible like the motor model (program), this one depending of the information accuracy received from the analyzers, whose integrity and level of training plays a decisive role here. "

Tudor 1999, uses the concept of coordinative abilities, which he considers synonymous with skill, these being defined as some " psychomotor qualities based on the correlation

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between central nervous system and skeletal muscles needed in order to make a movement"

The coordination degree of the movements is influenced by the level of mastery of motor skills, their level of automatization, but also random distractions or environmental characteristics.

The important objectives pursued in the psychomotor development are: the perceptual development, sensory acuity (kinesthetic), visual and auditory memory, ocular-motor coordination.

In addition to these important objectives we also have motor qualities and development of the complex movements. Between motor and sensory capacities exists indissoluble relational ties determined by sensor-motor processes, by those representative preoperative, those concrete operations and finally the logical, formal.

Report of space and objects around us is reflected in the body scheme. It is the base of current data which are based on the interoperability and exteroceptive sensory information. It was revealed the important role which the cuteness sensibility and the kinesthetic one have, the role of the visual and auditory information.

An important role is also occupied by later ability, the preferred hand being the one to create a dominance in body scheme representation. Eg. Left-handed subjects obey to the kinesthetic influences more than right-handed ones to which control is usually exercised at the visual-motor level. Other factors which exercise an influence in the construction of the body scheme are intelligence, emotional experiences and social factors in which the imitation and language are highlighted. Body scheme is the condition of developing the action programs and distribution of program corresponding messages (spatial and temporal distribution). It is the fundamental component in the psychomotor development conditioning the evolution of types behavioral: cognitive, motor, self-service, social-emotional.

How the forms of coordination manifest

Coordination occurs as:

- General coordination which means the ability to make rational, economically and creatively different motor actions. With increased multilateral physical training increases general coordination. Is the basic coordination on which it can be realized and build the specific coordination;

- Specific coordination which means the ability to perform motor activities specific to sport branches or tests more easily. Specific coordination manifests differently from one individual to another, from one sport to another, from one segment of body

to another. The athlete raise his specific coordination level through specifically targeted training.

Vicent. in 1972, analyzing the structure of human abilities, distinguished group factors which aim fine motor skills – Fine motor skills evidenced in movements involving a small number of muscle fibers or muscles, or general skills - Gross motor skills - evidenced in movements resulting from the involvement of a large number of muscle fibers or muscle groups.

Nicu,1993, distinguished in sport practice, motor qualities of general coordination - developed as a result of polyvalent preparations and which manifests itself in different situations in life, work and sports - and coordination skills specific to certain test or sport discipline", presented structure and used by the coordination term as well as the capacity one.

Emphasizing the importance of coordination in life in considers the general coordination capacity a result of ' polyvalent motor learning which is manifested in different daily life situations and the athletes; also allows the achievement in a rational and intensive manner of the motor tasks of all kinds, and in what concerns the specific coordination capacity, this one is characterized by, the possibility of varying gestural combinations of sports techniques(<http://despreindemanare.blogspot.com/>)

Bompa 2002, proposed the following classification criteria of coordination:

- the degree of difficulty - motor skills are low complexity degree, are included cyclical movements and habits of high complexity which contain acyclic skills;

- performance accuracy, a skill can be executed with some difficulty, slowly and without fluency if it is not well learned, or can be executed with precision, amplitude, speed and good harmony when acquired.

- by the time acquisition of skills, duration depending on the complexity, the level of mastered motor skills and subjects predisposition.

An athlete who mastered many skills and has a good coordination which shortens the time of acquisition of other skills, has a great capacity to adapt to unforeseen circumstances.

Conditioning factors of coordination

- Quality of the central nervous system (the value of coordination processes and cortex plasticity). These allow the development of appropriate responses throughout the multiple motor action as reaction to stimulus received from both outside and inside of the body. A special role here plays the kinesthetic analyzer which offers the possibility of



noticing and perceiving precisely his own movements, which contributes to faster acquisition of new movement structure.

- Functional quality (sharpness, smoothness, precision) of analyzers receiving organs (kinesthetic, statico dynamic, visual, tactile, auditory). Five of the analyzers contribute significantly to motor coordination, influencing differently the guidance and regularization process of gestural acts. These analyzers cooperate between each other and complete themselves.

Kinesthetic analyzer - is superior to other analyzers which operate only at large forms of movement. The most important sensorial centre is striated muscle, considered after eye as the most complex human sensory organ. Voluntary body movement is guided by its innervation by gamma fiber system. The specific excitant is the stretching.

Tactile analyzer - It informs about those movements taking place in direct contact with the environment, naming the shape and surface of the touched objects, the resistance opposed by them. Is also involved in the sensation of advancing and thereby contributes to the perception of motion speed, space and speed travel.

Statico-dynamic analyzer - This analyzer will bring information on body position and movement in space in relation to the force of gravity, the direction and acceleration in relation to the head. Specific sensations are those of verticality and bow of the body, rectilinear motion and rotation. Because of this we have the sense of balance and body movement's orientation in space and makes, therefore, learning all the realized exercises under conditions of precarious balance, position, and moves less than usual. Stimulation of the vestibular apparatus causes tonic reflex or relaxation.

Visual analyzer - It informs the near gestures (the central and peripheral view) and it represents somehow optical command of the gesture action. Optical analyzer activity is important in the first phase of learning the movements. Optical signals reflect primarily the state of the environment, including the body relationship movements and movements in relation to environment.

Acoustic analyzer - Plays, generally, a subordinate role because the content of the acoustic immediate information is limited to the act gesture. Acoustic data acquisition contributes to the learning of the rhythm, the characteristic tempo of some exercise.

Summarizing, we can say that the analysis skills reveal partial but crucial quality coordinative skills. Analyzers importance can vary a lot from one

test to another and generally from one sport to another. (Weineck, 1993).

Coordinative capacities at different ages

We believe it is necessary that in the coordinative capacity development should be take into account:

- Multiple gesture experience shortens the time of learning and makes more efficient the training in the context of the new gestural abilities. So, it is necessary to give great importance to developing a gestural repertoire as comprehensive as possible;
- Coordinative skills are the base of all learning motor skills at all ages;
- Coordinative skills do not admit the development; unless complex forms, continuous and variable;
- The coordination capacity has to be developed quite early;

Preschool age

Nicu, (1983) thinks that in the individual evolution is no chronological concordance between optimal training capacity of the coordinative faculty and conditional qualities. Biologically speaking, the land is better suited for gestural development coordination than improving conditioning physical factors of performance. According to recent research, guidance and regulation of neuro-muscular or sensory-motor gestures manifestly belongs to the domain of these basic functions, where the adequacy and successful development occurs.

Coordinative discordant faculties are, therefore, by Vittori, 1996 the result of inadequate provisions occurred early in life. Great differences observed between the trained and untrained children clearly show that the potential of existing coordinative skills development is not at all exhausted at preschool age.

The first school age (6/7-10 years)

High plasticity of the cerebral cortex allows at this age a huge coordinative skills development, the differential inhibition still underdeveloped, these constitute a preponderance of excitation processes in relation to the inhibition processes. Kinesthetic analyzer is still little developed and the accuracy suffers as its spatial and temporal aspects. (<http://www.wooster.edu/physics/JrIS/Files/Satti.pdf>)

Predominance of excitation processes it's translated through a marked irradiation of excitation, so, the still unfixed traces of neuronal activity can be easily erased and cerebral cortex is unable to retain



functional connections - brain centers excited gestures curls together or successively. For this reason at this age, high capacity learning is not associated to a equal faculty to retain a long period of time learned movements. (Demeter, 1981).

Second school age (10-14/15)

Achieving motor brain maturity, which comes in second school age, allows better involuntary motor cooperation (bulb, stem encephalitis) and voluntary (the cortex).

Plasticity of the cerebral cortex which is still elevated and improved ability of perception and processed information allows children to learn new gestures skills very quickly. Same happens if the force-lever ratios are developed favorably at this age. Now also plays an important role the upper extremity muscles, since the report of development of upper extremity muscles and the lower extremities is 27:38 and 28:54 at this age till adulthood (Demeter, 1981). Also the corporal weight is lower now.

Supported by a particularly training in sports it is managed the forming at the athletes some complex sensations such as:

- muscle sense
- harmony and expressivity sense
- apparatus sense (beam, bar)
- sense of rhythm and tempo, etc..
- Quality of the transmission of nerve impulses and muscle innervation
- The performer's capacity of anticipation
- Previous motor experiences of the athlete which is represented by the number and complexity of the mastered individual motor skills. Skills are educated and developed in the training process and achieving acts and motor actions based on new coordinative sequences fixed at the level of SNC in a previous motor experience. So the motor combinations stocked on one hand and the number of motor skills on the other hand are larger, the easier it will be to own new movements and the level development of skill will increase.
- The performer's memory and way of thinking
- The level of development of other motor qualities which involves for each of these issues coordination aspects, of nerve functions process adjustment and the developed motor activity imposed requirements over the dependent body.

The content of the coordinative capacities (Okamoto, Masuhara, Akuta, 2006) quoting Procnazka includes in the coordinating content, eight groups factors which are:

- SNC functional dynamic and static equilibrium and of the ssanalyzers;

- The ability of orientation in space;
- Coordination of large muscle groups;
- Coordination of limb movements;
- Motor ability or analytical ability;
- influence differentiation and reproduction of time and motion rhythmicity structures, ability to maintain tempo;
- Differentiation and replication of the direction, speed and range of motion, developed kinesthetic sense;
- reproductive capacity and size differentiation of muscle contraction.

In these, the author adds the ability to change direction, speed and amplitude ratio necessary restructuring movement arose during the course.

Conclusions

1.A good motor coordination can lead to the possibility of giving motor responses no matter the motor task complexity. Quality of the response is foreshadowed by the precision movements, conditioned by spatial characteristics, temporal and dynamic movement.

2.The favorable evolution of a gymnast's career is guaranteed by the ability to learn quickly and efficiently in new gestures, the speed of learning presenting a crucial interest for the economy training.

3.The development of coordinative skills gives stability to the performance because of the processing of the received information from the analyzers which are scheduled for reception, decoding, directing and initial development of such information, their accuracy depending on the fidelity's performance similar to the set model.

4. It is recommended that training which abords the development of coordination to meet some principles such as: early development of this quality, continuity of learning, the variety of development processes and integration of this quality in general athletes training program.

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