

## Theoretical perspectives to the teaching of motor and sports activities: characteristics and constraints of the behaviorist approach

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### Abstract

The present work is a theoretical reflection on the possible application of new paradigmatic models of learning to motor and sports activities teaching. It arises from a growing need to promote the quality of teaching of motor and sports activities (Penney et al., 2009) for their acknowledged educational goals and to reconceptualize the teaching practices most commonly used in Italian schools, still strongly influenced by the behaviorist paradigm whose characteristics and constraints are also highlighted (Sibilio, 2009).

The aim is to encourage, through the analysis of the characteristics and limits of behaviorist approach in the teaching of physical and sports activities in educational contexts, a possible opening towards the latest theories on the mechanisms of learning *through and about movement* (Arnold, 1988, Sibilio, 2004) which can be useful pedagogical suggestions for teaching.

The teaching of motor-sports activities is a complex phenomenon that cannot be exhausted in the only study on the functional outcome of the training practices and conditioning mechanisms, it requires an understanding of the potentials of the person that can be used in the teaching relationship: it is definitely a theoretical-practical knowledge that integrates the subjective component to the dynamic and contextual reality.

For this reason the suggestions coming from the contextualist, costrutivist models of learning should be considered, reevaluating the *embodiment* of learning as well.

**Key words:** *motor-sports activities – behaviorism-didactics – learning*

### Introduction

The acknowledge of a definite scientific identity of the motor and sports activities and their positioning among the sciences of education has required, in recent decades, a deep reflection on the educational aims of the movement activities.

They, because of their own extremely complex features, can be considered as a convergence center to which the knowledge of many scientific areas are addressed, ranging from the philosophical and psycho-pedagogical sciences that identify the movement as a tool for the human development, to the biological, biomechanical and bioengineering sciences that provide their scientific knowledge on the human body and its kinesthetic potentials. The interdisciplinary relationships that develop among these scientific domains create a significant permeability of concepts, theories, methods and a necessary interaction with the practice. It has suffered for a long time in Italy from a culture of simplification that has led to a model of expert and competent teaching practice as the precipitate of pre-established theoretical models (Laneve, 2008), strongly influenced by theoretical paradigms that have provided different interpretations of learning.

The theoretical reflection of this work arises from a growing need to promote the quality of teaching of motor and sports activities (Penney et al., 2009) for the acknowledged educational goals and to reconceptualize the teaching practices most commonly used in Italian schools, still strongly

influenced by the behaviorist paradigm whose characteristics and constraints are also highlighted (Sibilio, 2009).

The aim is to encourage, through the analysis of the characteristics and limits of behaviorist approach in the teaching of physical and sports activities in educational contexts, a possible opening towards the latest theories on the mechanisms of learning *through and about movement* (Arnold, 1988, Sibilio, 2004) which can be useful pedagogical suggestions for teaching.

### The behaviorist approach in the teaching of motor and sports activities

The behaviorist scientific tradition has deeply and for long time influenced the teaching of motor and sports activities in formal educational contexts.

This, essentially reductionist, approach has simplified the complexity of the learning systems, including motor learning systems, reducing them to predictable mechanisms because influenced and determined by external stimuli and therefore repeatable in the presence of the same conditions.

Prerequisite of the behaviorist approach is the observation of motor behaviors, renouncing the analysis of the mechanisms that underlie them. Behaviorism, in fact, is a scientific paradigm based on the observation of behavior, prediction and control of human activity through the analysis of a stimulus that determines the reaction (Watson, 1913).

This perspective has oriented during the last century the didactics experimentation of motor and sports activities throughout the testing and the systematization of the stimulus-response mechanism and has consequently affected the teaching strategies aimed at inducing the acquisition of responses using an inventory of stimuli, corresponding to one or more inputs able to produce a mechanism of motor-praxis and functional "conditioning"

- The learning in a behaviorist key can be conceptualized through the following key assumptions:
- Learning occurs by accumulating atomized bits of knowledge;
- Learning is tightly sequenced and hierarchical;
- Transfer is limited, so each objective must be explicitly taught;
- Tests should be used frequently to ensure mastery before proceeding to the next objective;
- Motivation is external and based on positive reinforcement of many small steps (Shepard, 2000).

In this perspective, learning takes place through associations and accumulation of basically simple units (Lieberman, 1990) that are organized in a hierarchical manner and it is therefore the result of a summarizing process determined by external reinforcement and not by the intrinsic motivation of individuals.

Such a learning model contributed to determine the features of the transmissive-imitative teaching and learning model of physical and sports activities where those who teach *transfer* the knowledge while the learners *use imitative procedures* (Santoianni et al., 2003).

The behaviorist model also predisposes the teaching practice in the motor and sports activities field to frequently verify learning and to plan the educational path clarifying the objectives because of the possible predictability of performances.

The behaviorist organization of the motor and sports activities teaching can be summarized in the following linear structure:

- assessment of the entry motor levels or functional and performance prerequisites; definition of objectives;
- planning of the educational path, predicting motor behaviors, attitudes and expected performance; use of execution failure as a reinforcement and/or inhibition in the mechanisms that underlie associative learning;
- ongoing evaluation of "relatively autonomous" motor learning and of that

preparatory to other simple or complex motor learning.

Consequently, the execution failure or the success of an action become elements of inhibition or reinforcement in the associative mechanisms that underlie learning.

In this view of learning, which leads to hypothesize a possible construction of motor behaviors through the accumulation of stimulus-response associations, the studies of Thorndike and Skinner have certainly provided a contribution.

Thorndike, with its assumptions about the function of the exercise, theorized that the consolidation of the link between stimulus and response can be achieved through the mechanism of repetition or/and satisfaction, arguing that the reiteration of an action as well as the effect of the satisfactory response to a problematic situation, stabilize the behavior. The whole process can be seen as the association between visual and tactile stimuli on the one hand, and musculoskeletal system response on the other hand.

In line with this model, in fact, the motor responses that are correct tend to be repeated with a progressive reduction in the time of motor "problem solving" (law of effect) and the most frequently performed behaviors are learned more firmly and re-performed under similar conditions of those in which they were learned (law of exercise) (Thorndike, 1911).

Although the *exercise- satisfaction* behaviorist model theorized by Thorndike has demonstrated, over time, its theoretical and applicative limits, it continues to be in use in the teaching of motor and sports activities in the Italian schools.

The limits arise from the demonstration that the end of the exercise or the absolute lack of exercise does not in many cases adversely affect the procedural mechanisms that underlie the motor learning and that in no satisfactory situations or even in frustrating ones it can still generate new learning; so it is not only the gratifying effect to consolidate the stimulus-response relationship. Nevertheless, in the training methods of strength and speed, which represent the objectives of motor activity in the educational field, the characteristic features of the teaching strategies (such as the continuity of the action according to a cronogrammatic principle to be respected, the frequency of repetitions or actions to be included in the planning of activities and the intensity of the stimulus of the action to reply), still affect the way of teaching.

This approach of teaching does not take into account the intentionality of the motor act that is more often driven by a need and not mechanically driven by external stimuli (Tolman, 1932).

Another key to the interpretation of the teaching according to the behaviorist model is due to Skinner

(1976) who has drawn attention on the behavioral patterns used to act in the environment whose exogenous effects reinforce the external response.

The following quotation from Skinner is illustrative:

*"The whole process of becoming competent in any field must be divided into a very large number of very small steps, and reinforcement must be contingent upon the accomplishment of each step. This solution to the problem of creating a complex repertoire of behavior also solves the problem of maintaining the behavior in strength. . . .By making each successive step as small as possible, the frequency of reinforcement can be raised to a maximum, while the possibly aversive consequences of being wrong are reduced to a minimum. "* (Skinner, 1954, p. 94).

Such a viewpoint promotes a theory of motivation and, at the same time, confers to the contextual elements a major role in the construction of motor behaviors.

In terms of teaching, the focus is on the interdependence "person-context" in the achievement of learning also in the sport-motor field, that means to build an effective teacher-student relationship, to provide spaces and teaching methodologies for motor-sports practices needed to improve the level of performance, to measure performance, capacity, motor progresses, following a linear system which combines the type of the proposed commitment with level of the achieved performance.

This approach recognizes the positive or negative conditioning of the contextual conditions renouncing the exploration of the neurobiological and psychological features underlying the subjectivity of the motor and sports activities learning, for which the biological substrate and its functioning as well as the elaboration processes of the external information are necessary mediation even if not objectively investigable.

Another educational suggestion based on the behaviorist model applied to learning and teaching through motor and sports activities comes from Bloom (1972) who theorized tools to support the teacher to plan an educational path which has gradual and increasing difficulties in which are clear, from the descriptive point of view, the expectations of teaching in terms of learning.

The applicability of Bloom's taxonomy in the motor field has met the need of a provisional attempt that could be used as a guide to teaching and as a description that could standardize learning skills and competences used in educational contexts.

The educational approach to motor activities in Italian schools in fact uses and theorizes methodology of teaching that, in line with the behaviorist tradition, tend to favor the achievement

of goals that all students should potentially be able to achieve, by giving each student the ability to create a stimulus-response relationship fostered by the environment, by the degree of satisfaction and regulated by the characteristics of intensity, frequency and continuity of the educational stimulus.

Behaviorist teaching of motor and sports activities requires finally the recognition of the generalizing functions of the "learning by doing" (Dewey,1916) considering it as a means and opportunity to transfer the motor behavior and, therefore, the same pattern of response to a stimulus in a similar problematic situation.

The practice and the process of generalization, in a teaching methodology that is based on the behaviorist model, is the constant feature of all dexterity games, or the ones engaging the use of tools, or in team games, where it is likely that the acquired motor patterns can be reused even if restructuring them on the basis of the characteristics of the new problematic situation.

For a recovery of the educational dimension of motor activity, it is necessary, therefore, a review of this teaching approach through a greater personalization of intervention strategies that shape the special needs of the person without exposing them to the dangers of:

- *generalization* or tendency to use didactic models which have proved effective with other people in similar situations.
- *inhibition* or *reinforcement* as measures of intervention intended to modify or reinforce motor behavior without providing an alternative opportunity for the resolution of a problematic situation.

### **New theoretical perspectives to the teaching of motor and sports activities**

The educational need to translate the bodily dynamism of in coordinated and finalized motricity and above all intentional and subjective functional to meet their needs, would require a rethinking of educational practices in the motor-sports field in Italian schools still affected by behaviorists models.

An initial contribution has certainly been provided by the cognitivism that has fostered the progress towards the overcoming of the behaviorists assumptions, enhancing studies on learning, the subjective moment of intuition and cognitive restructuring without necessarily using already learned patterns.

Learning in the cognitive perspective, is translated into a process and not into a sum of discrete units: the subject learns how to restructure the problematic situation, capturing the essential implicit relationships and reorganizing his/her field

of experience. (Frauenfelder, 2002). The construct of cognition, subjectively intended, takes the place of stimulus-response association and external factors conditioning the subjective intuition. If the behavioral models pointed to the reinforcement as a determinant in learning, cognitive theorists consider the motivations, extrinsic and intrinsic sense of *self-efficacy* (Bandura, 2000) and attributions of success and failure of performance as the key concepts of the cognitive processing.

The role of context emerges at a later time, not as a constitutive feature of learning experience. This has given birth to two theoretical and conceptual models seemingly antithetical but implicitly complementary that alternatively have affected the teaching of motor and sports activities in the educational field, sometimes paying attention to outside stimuli and the characteristics of the contexts that determine learning and sometimes focusing on the cognitive characteristics of the subject, trying to define tools and conditions that promote the full utilization of skills and at the same time, the possible building of capacities in an essentially deterministic key.

The need for a review of such practices in the field of motor learning, of which we recognize the limits, currently requires to recover the most recent post-cognitivist positions that have overcome these theoretical models without denying them completely, but absorbing them in more complex view of learning that takes place in the interaction person-context.

The new paradigmatic frameworks which outline new perspectives for the teaching of motor and sports activities showed the impossibility of separating the learning of the movement and through movement from the contexts in which are implemented the relationships that constitute it through the intelligent action of the individual. This has undoubted implications in the field of motor and sports field, because it leads to look at movement teaching and learning as a situated practice and s action (Lave & Wegner, 1991; Chaiklin & Lave, 1993), extending the field of interest of teaching to psycho-emotional, material, social and cultural factors that also affect the teaching of the movement and through movement. In this co-determination seems to be particularly sensitive the teaching of physical activities because it would be ineffective if it provides explicit plans of action through a strict program designed to achieve explicit objectives, without considering the circular interaction between intentions, actions and feedback as the basis for learning. (Clancey, 1997). Also it would be reassessed in an embodied vision of learning, even the physical characteristics of the people to whom the educational action would be

addressed as motor development, and with it, cognitive development cannot ignore the components of the body that express themselves in potentially educational contexts, translating actions into intentionally and culturally produced gestures.

### Conclusions

The analysis and reflection on theoretical models of learning, with particular reference to the behaviorist learning model still affecting teaching practices currently in use in motor-sports field in the Italian schools, is the starting point for a possible opening to the most recent theories on the mechanisms of learning *through and about movement* from which to draw new pedagogical suggestions to enhance the quality of the teaching of motor and sports activities.

The reductive approach that has confined the teaching of the motor and sports activities to the application of the stimulus-response strategy, requires a broader psycho-pedagogical reflection on the issue of subjectivity, of intentionality, of the constructiveness of the learning process while recovering the most recent theoretical models of contextualist matrix. The teaching of physical activities cannot be the deliberate giving of input aimed to produce learning effects, but should start from the subjective way by which an individual processes information, its subjective characteristics, the regulatory mechanisms of its relationship with the context, its unique ability to respond to endogenous or exogenous stimulus in a problematic situation in movement activities. In the field of teaching methods of motor and sports activities in our country, the behavioristic approach has prevailed due to the inherent mechanistic and training dimension of motor activities in the Western tradition that has only recently acquired in Italy an educational dimension and the function of man formation *tout court*. This has also led through a long process of epistemological definition of Motor Sciences to their positioning within the field of the Sciences of Education by imposing a necessary critical reflection on the effectiveness of teaching behaviors traditionally affected by the paradigms of learning more scientifically supported.

The teaching of motor-sports activities is a more complex phenomenon that cannot be exhausted in the only study on the functional outcome of the training practices and conditioning mechanisms, it requires an understanding of the potentials of the person that can be used in the teaching relationship: it is definitely a theoretical-practical knowledge that integrates the subjective component to the dynamic and contextual reality.

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