

THE UNIVERSAL MOVEMENT CLASSIFICATION

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Preliminary scientific communication

Abstract

The purpose of this article is to present the Theory of universal movement classification as determination of new paradigm based on complete anthropological postulates of human activity in general and kinesiology as well. Design and methodological approach is oriented toward two extreme situations: a) goal achievement i.e. winning and b) experiencing defeat, with confrontation as a concept obviously located in the middle of these two extremes which weakens intensity in accordance with the approach to one of these two extremes. Analyzing numerous literature, but only targeted sources listed, we could reliably confirm the existence of the proposed theory with many results which confirm the theory. It is assumed that the paradigm has virtually no restrictions, although we must leave the space to other researchers to try concrete operational ideas which rely on the paradigm. The value of this article is in a totally new theoretical approach that establishes the scientific philosophy of motion, philosophy, kinesiology, but equally some other disciplines and human activities.

Key words: theory, motion, classification, universality

Introduction

Motion is complex, multiple-function human ability where one can perform the action of: 1) **moving body** in space b) **moving some segments** of his body in space or 3) **acting on objects** in their environment (Bonacin et al., 2009). In kinesiology we always encounter all these actions therefore this is a composite and the differences are in the intensity of each of mentioned types. Thus for example in running the effect on the objects (if we exclude basis reaction or effect on air) is really minimized, while in Shot put the goal is to maximally affect the object. It is obvious that classification of motion is not that easy to carry out without stepping in new problem definitions. Evidently, there can be many classifications, but it is not certain that all of them would endure criticizing (Bonacin, 2004; Bonacin et al., 2008).

This all depends on starting point and criteria we set before classification. Unfortunately, with criteria settings we have total confusion so it is almost impossible to find a little more serious criteria settings that would lead to universal classification that would be convincing from kinesiology point of view. It is necessary to emphasize there is practically infinite number of possible motions, which obstructs forming of such universal classification that would be acceptable for different complex activity sets (Bonacin et al., 2010). For example typical biomechanics starting point teaches us there are: **forces** (compression tension, division and torsion) 2. **Musculature classification** (agonists, antagonists, targeted, synergists, stabilizers, dynamic stabilizers, antagonistic stabilizers) 3) **function of joints** (muscles through one, two or three joints) 4. **Contractions** (isotonic, isokinetic, concentric, eccentric, dynamic, isometric), 5) **tension curves** (gravity-dependent, resistant to variability, bell shaped, increasing, decreasing, stable, 6. **Anatomic locations**

(anterior, distal, inferior, lateral, medial, posterior, proximal, superior), 7. **Vertex** (source, inserting,) 8. **motions** (abduction, adduction, circumduction, extension, eversion, flexion, hyperextension, inversion, pronation, protrusion, supination, retrusion, rotation), 9. **source power** (active, passive), 10. **multiple segment motions**, e.g. scapulohumeral rhythm (scapula, humerus, thorax), and 11. **Newton laws** (inertia, acceleration, reaction). All this is very important (Kleen, 1921; Opavsky, 1979; Torlić & Zečević, 1990; Chye et al., 2010), but still is not matching the actual solutions that occur in complex motions, since, the way it is described, the motions are extremely divided and complex motion is losing its meaning. Such approach leads toward infinitesimal identification (Fod et al., 2004; Stergiou, 2004), that completely fails in situations when motion is very complex (Bonacin, 2005).

The best example for that are actions in judo, not to mention motion with esthetic component of figure skating or dancing. Furthermore, this way it is not possible to describe motion precise enough when there is interaction between participants in sport games and table tennis pairs or interactions with unpredictable environment conditions in skiing, sailing and mountaineering or in even more complex situations (Michaelis, 2004). In all this activities, certainly, basic biomechanical legalities exist and can be recognized, but for top success in those activities it is not nearly enough. It is similar with classification based on medical-physiological settings. Even if we are aware that we get energy through different ways of ATP resynthesis (CP, glycolysis, lactate, fatty acids, anaerobic, aerobic work...) this model is not for serious discussion regarding classification, regardless crucial discoveries for motion understanding (Trew et al., 2001; Bonacin et al., 2009).

In described examples many unfamiliar knowledges are disabling consistent identification of essential movement attributes that are crucial for reaching the top in kinesiology activities (Malacko, 2010). It is not excluded that for this reasons there are continuous attempts to simplify sport activities, i.e. „when we cannot bring knowledge to activity, then we should bring activity to our knowledge“ which means *par exelance* degradation with fitness, aerobics and limited kinesiotherapy glorification, in other words the attempt of knowledge articulation in familiar controlled conditions where we cannot blame fitness, aerobics etc. Global kinesiology movement classification knowledge outgrew such limited description especially when we include other anthropological dimensions like motivation, personality traits, different shapes of cognitive process, social components in entire analysis and synthesis system. It becomes obvious this is an extremely complex problem in which a decent set of great authority certainly had something to deal with. Primarily there is a question how to set movement classification criteria (Bonacin et al., 2010). During this time life inevitably flows and according to needs for systematic practical actions:

1. Activities are carried out (transformation processes, training) in a way to **use** knowledge that is so far clearly founded or to
2. Carry out activities (transformation processes, training) in a way to **ignore** new discoveries because of their lack of understanding. In both cases we have two unacceptable consequences: a) one (les bad) to carry out treatments that are not certain to have scientific foundations which results with dissatisfaction, trauma, injuries, diseases etc, and b) second (much worse) there is no appropriate cognitive progress nor the ones who are direct performers (sportsmen) or the ones who prepare them for the performance (managers, trainers, scientists,...). It often creates "Vicious circle" where symbolically speaking "blind" with assistance of "silent" lead the "deaf" through Scylla and Charybdis in kinesiology activities and utilities, with the uncertain future of both, all in front of simply "thrilled public" who does not understand why you should go to the stadium if there will not be some kind of game of a chance, enough drinks, smashed car and a few broken legs or a broken bloody head.

However, the classification has been possible to establish, in a way to establish long-term positive repercussions in the theoretical kinesiology, if we accept the crucial reflection on the purpose of motion (Bernstein, 1947; Čhaidze, 1970; Luria, 1983). In this case, things are very different, because now the classification does not occur spontaneously under unknown criteria (bad!), or under the criteria of other scientific disciplines (completely unacceptable!), but within kinesiology as an integrated motion discipline. In order to better understand problem settings of kinesiology motion settings which we will present, we will rely on sport activities, although it is the same which utility was observed. Moreover, this model is built in a way that is universal and hence it is valid for any classification in any human activity.

Classification hypothesis

Before detailed discussion, in order to better understand the universality of the model, we should induce that in sport (same as anywhere else) a special term is present which defines the essence of activity where at least two opponents have the same but also conflicting goals and both trying to gain advantage and win the trial. This term is **confrontation** and it is determining the level and manner of the essence of such a confrontation. We will observe confrontation through three aspects a) considering **the way of achieving** results in a sport that is explicitly, by measuring and assessed (Bonacin et al., 2008), b) considering **the way of cooperation** of the actors involved in individual sports activities, i.e. individual, group and collective and c) considering **understanding the state of** current competition of involved individuals or teams i.e. acute, modulated and delayed. During result achievement, accomplishing explicit result is happening without direct contact with the opponent, usually expressed in some physical units, credits etc., (javelin...). Achieving results by measurement occurs when, to achieve the result (to win) the existence of direct opponent is necessary (boxing, soccer...). Achieving estimated result occurs in situation of expert assessment which includes subjective evaluation of achievement based on assessment of performance (figure skating, diving, dancing...).

With cooperation, the number of participants is essential for understanding since e.g. with high jumps it is always the individual, in bobsleigh it is collective achievement, but in soccer, regardless global team goals, in realizing actual actions, there is always less than 11 players involved (3, 5,).

Knowing the situation presents knowledge about result achievement where players always know the acute result of the match, while in figure skating, javelin etc., sportsman, after the performance, always knows his score but not necessarily the score of the opponent which makes the competition modulative, while in boxing the result is postponed until the end and the winner is not unknown until announcing judicial decisions (Bonacin et al., 2010). Before the actual definition of motion classification, we should specify that the sport (with all possible defects caused by misunderstanding and ignorance) is an ideal way to validate the achievements (Bloomfield et al., 2004) We should also mention that in all our human segments to the smallest cells, we have embedded **victory** as a concept, since in ancient history (isn't this the case today) with all possible physical difficulties (earthquakes, climate) and biological hazards (animals, enemies,...), it meant survival for the winners and very likely death for the defeated. In the context of mentioned discoveries, it is clear there is an absolute defining of cognition in order to increase knowledge in its continuum (**progressing**) with appropriate (optimal) knowing of the width of individual segments of the total actual knowledge (Bonacin, 2005; Murcia et al., 2009).

It is also clear that all individuals are to some extent exposed to the three relevant existent **successive** processes: on-line, common & batch (Bonacin, 2005). Finally, it is clear that, in accordance with all this, there is a **main goal** which is hierarchically superior to all other goals, tasks and local activities, and defines the **appropriateness** of activities. It is also clear that **the victory** is an inherent property of a man and that **confrontation** has its own very specific and clear definition as the role and the methods of the events. Based on all this, it is easy to form a universal articulation level structure of agonistic (or any other human activity), that clearly shows which composite elements have a role and where a lower level of articulation realize the goals of a higher level. Those levels include as follows: 1. The final victory with a clear way of achievement, 2. Achievement with the clear way of realizing activities, 3. Realization of activities with a clear offensive action, 4. Offensive action to win a clear space, 5. Conquest of space with a clear effect on opposing defense, 6. Acting on defense with a clear rights to attack, 7. Apparent confrontation (achievement, cooperation, knowledge of the state), 8. Disruption of enemy action along with deprivation of the right to attack, 9. Organized defense i.e. acting against opponent's attack, 10. Defense against the opponent's conquest of space, 11. Moving the opponent away from your own space, 12. Neutralizing the opponents realization attempts and 13. Defeat as targeted enemy achievement (Bonacin et al., 2010).

Paradigmatic frame

The model defines all the goals, and as you can see they are strictly **hierarchical** set. The highest goal is unconditionally **final victory**, and less than that cannot be set or accepted in any agonistic (or any other) human activity (Walker, 2005; Bonacin et al., 2009; Piek et al., 2008). We can, for example, accept a smaller defeat if the results are added up, we could also accept temporary defeat in a trial, if we count on total league win, or we can accept the current loss if the opponent is too strong, but these are situations that represent a **transient** event at the creation of a final victory, no matter how and when it occurs or was expected. Example from soccer: 1. Winning (to achieve more goals then the opponent), 2. To score a goal (according to agreed rules drive the ball into the opposing goal), 3. Throw in the ball for a chance (to attack with the ball with the aim of scoring), 4. Attacking with the ball (to conquer the opposing goal area), 5. Conquer space (share the ball between the players), 6. Quick exchange of the ball (have the right to ball possession), 7. Apparent confrontation (measuring, group, acute), 8. Possessing the ball (do not allow the opponent the right to possession), 9. Do not allow the possession (organized defense from the opponent), 10. Defend it (keep the ball away from the goal for the loss of space), 11. Move away (do not allow the ball in our goal), 12. Getting the ball in our goal (allowing the ball in goal). 13. Letting the ball and defeat (take more goals then the opponent).

Example from boxing: 1. Winning (achieve more punches in a fight or decisive punch). 2. To punch (according to arranged rules punch the opponent) 3. Try to punch the opponent (with the aim of attacking for scoring) 4. Fist attack (provide space for a punch), 5. Provide a space (act on the opponent's defense), 6. To act fast on defense (have the right to perform counter attacks), 7. Obvious confrontation (measuring, individual, delayed), 8. Obstruct (not allowing the opponent right to perform a punch), 9. Not allowing (organized defense from the opponent), 10. Defend (move the opponent away due to loss of space), 11. Move away (not allowing preparation and performing impact in own body) 12. Punch performance (letting the punch into the body), 13. Allowing a punch (taking more punches or the final punch from the opponent). Example from figure skating or dancing: 1. winning (achieve maximum esthetic exposure), 2. Achieving maximum (achieve unity of all elements of performance), 3. Achieving unity (expression of personality in the performance), 4. Expressing personality (conquer space of audience ratings), 5. Conquer space (move according to defined program) 6. Suddenly move (to posses the right to skate) 7. Obvious confrontation (estimated, individual, modulative). Example from javelin: 1. Winning (in several attempts at least once throw further then the opponent) 2. Throw further (according to agreed rules throw javelin), 3. Throw (to attack with javelin with aim to score) 4. To attack with javelin (conquering the space with javelin acceleration), 5. Conquer the space (rush in the direction of the target), 6. Strong start (possess the right to throw) 7. Obvious confrontation (explicit, individual, modulative). Example from high jump: 1. Winning (in few attempts at least once jump higher than the opponent), 2. Jump higher (according to agreed rules jump over a bar), 3. Jump over a bar (to attack a bar with the aim to fly over), 4. Attacking the bar (conquering space with body acceleration) 5. Conquering space (rush into the direction of the target), 6. Strong start (to posses the right to jump), 7. Obvious confrontation (explicit, individual modulative). Example from auto racing or running 5000 m; Winning (to get to finish in the competition), 2. Arrive before (according to agreed rules to be in front of all opponents), 3. To be in front (to attack with aim to overtake), 4. To attack (to provide space for overtaking), 5. To provide space (to act on the opponent's lag time), 6. Fast reaction on lag time (have the right to overtake and advance), 7. Obvious confrontation (measuring, individual, acute), 8. Obstruct (not allowing the opponent to overtake), 9. Not allowing (organize defense against the opponent), 10. To defend (go further and escape the opponent due to loss of space); 11. Go further (not allowing overtake within a racetrack), 12. Not allowing overtake (not letting the opponent to pass), and 13. Bypassing and defeat (to reach finish behind the opponent). Example from chess: 1. Winning (to capture and attack opposing symbolic figure of the leader), 2. Capture the king (surround and threaten the king with own figures), 3. Surround the king (to attack

and eliminate king's support), 4. To attack support (conquer the space and eliminate other figures), 5. Conquering the space (moving toward king), 6. Suddenly act on defense (have the right to destroy the defense) and 7. Obvious confrontation (measuring, individual, acute). The example from economics: 1. Winning (on the market achieve monopoly for sale of ideas/products), 2. Achieve monopoly (maximize profit with business actions), 3. Maximize profit (to attack the market more intensively than the others), 4. To attack the market (conquering the space and indirectly weaken the others), 5. Conquering the space (deactivate quality competition actions), 6. Deactivate competition actions (have the right to improve the company), 7. Obvious confrontation (estimated, individual, modulative). The example from science or education; 1. Winning (make the job of your own desire with competition), 2. Make the desired job (maximize knowledge about some domain), 3. Maximize knowledge (to attack information – to study) 4. To attack information (conquering the space and discover), 5. Conquering the space (to activate own quality projects), 6. Activate own projects (having the right to realize ideas), and 7. Obvious confrontation (estimated, individual, acute) (Bonacin et al., 2010). The fact that the economy does not create such a monopoly because it is extremely difficult or even because of regulations that prevent a monopoly, does not mean that it is not the ultimate goal of every economic entity. After all, quality action certainly weakens competition and puts them in a position that their business is limited by value, geographically, through marketing, knowledge, quality,..., where in this model we do not discuss the planting and other forms of direct dealing with competitors such as industrial espionage, abduction of human and other resources, etc., if at all is possible to operate without the insight and activities targeted at the opponent. It is similar in education, where there is certainly competition (as well as cooperation), but the person values are realized in described way, regardless the fact that in some project more than one person is involved.

Confrontation definition

We still have a question of confrontation, which is apparently located in the middle, between commonly defined so called offensive and so called defensive actions. This "thin line" (which is certainly not thin), in performance of each subject (entity, group, corporation, team family, domicile, country...), presents a true determinant where the actual preparing potentials (training) and engaged potentials (the game) of the subject who performs somewhere are reviewed. Although, today we are trying to present how one, for example, sports team in the game is acting simultaneously in so called offence and defense phase and also transition, this certainly is not the case. Let's say we have 5 players of basketball team on the field. It seems there should be some specific defense action in attacking phase in order to interfere the opponents attack (Bardram, 2004).

However, in its final articulation, if the opponent is very well prepared and integrated with a series of great teams and top individuals, tactical highly supported, in addition well-managed from the bench, 5 of our attacking players with full capacity and commitment may not be enough to realize our goals (Argyris, 2004). Therefore, it is quite incredible that in this situation we could attack with less than 5 players as the rules allow. It is the same when our players, during the offence, allegedly realize defensive tasks, since doing this they will be occupied with activation of useless technically-tactical programs that will actually be used only if we lose the ball and reach the basket. Transition that is mentioned in literature, in described conditions does not occur on the field at all; it is literally measured in milliseconds and is realized in the head of athletes who are actually located in one of two dichotomous states: offence or a defense! There is nothing in between, and activity status completely depends on the possession of the ball. From the obvious, when the opponents are relatively equal (our sphere of interest) and when the engagement of maximum capacity is needed we only have defense and offence. Specifically, in basketball, you might try to define a situation when, during a game, the transition is possible, i.e., when neither team does not have possession of the ball, and this is only when one player throws the ball toward the basket. This is usually a short time (a second or two) but even then there is no team's equality. The reason for that is that well-composed defense always has the advantage of a logical jump to the ball rebounded, which means that the defense of one team does not start with only losing the ball or scoring, but also losing the ball or at the moment when the ball is directed toward the basket. This is the moment defense starts regardless how some trainer designed and imagined it. Confrontation however runs continuously, as opposed to some hypothetical and too simplified terms of offense and defense applied in sport games. This confrontation is the key information which helps us understand the essence of anything human, and therefore the sport and kinesiology. In presented examples the term "obvious confrontation" is mentioned, which is understandable since this is in the situation when individual/team does not have a stable possession of the ball, or when the opponent is throwing javelin, or when it is deciding whether to attack the opponent boxer etc., but mostly when sportsman/team does not decide the game or the following immediate actions alone. Then we have obvious confrontation which presents the real problem, since this is the system with too many opened parameters and high degree of uncertainty. Confrontation is present while one team/individual attacks regardless how, but then potentially the situation maximally under control of one or the other team/individual, since this is a system with closed set of solutions (either there is a point/punch or there isn't). I.e. one side is familiar with all basic solutions and possible actions that one team through training mastered and attempts to implement.

The biggest "pressure" generally is not on the javelin thrower XX when it is his turn, since he trained for it sometimes even 20 years, but when the opponent is throwing YY, because in that moment for XX parameters and solutions that will lead to this or that results are unknown, which means XX is not deciding but YY is. Confrontation is decreasing at both sides accordingly with one side approaching realization of its goal, regardless physical state in sports arena or regardless who is in possession of the ball or who is punching. According to this model, all other situations describe lower level of confrontation, and almost the lowest is in the moment when one team achieves highly set local goal e.g. achieve a goal in soccer or when placing a punch for a countdown in boxing. Actually the lowest level of confrontation is when the match finally finishes with one of the opponent's winning. The fact how somebody bares the final match and its consequences is not the subject of this analysis, because immediately after the end of the match, and as soon as the final result is known, begins a new cycle of preparation for the next period (weekly, monthly, annual, global, Olympic or life). In this way we universalize any process which includes clearly defined activity goal, which is usually the case in kinesiology, kinesiotherapy, recreation, education and especially in management as special kinesiology utility.

Movement classification

Motion, therefore, no longer can be considered as "dry" mechanical articulator movements or as a simultaneous function of physiological systems of a man, and in team cooperation as the sum of the psycho-motor activity of a single or more individuals, but as a simultaneous multiple functions in accordance with multiple dimensions with a clearly defined purpose. It is, therefore, necessary to enter kinesiology sphere according to the knowledge needed to define motion classification in order to accomplish that task. According to previously mentioned, 13 levels were defined for overall classification, and according to the above logics we should start from the beginning, from the highest level. 1. - ***motion required for successful implementation of sports (but also any other) efforts***. In the context of this chapter, the first we should ask is what the motions that level would include, because at this level, is the dominant in the management based on the highest motivation settings, which are rendered as achievements in the social environment. According to offered model it is clear that when the goal is achieved we stop any, by then, targeted activity that precede to that goal, so we cannot discuss about motion at this moment. On this level it is only important to start the defense or to celebrate total victory. This level constantly compares set goal and achievement with ***evaluation*** which naturally seeks to termination of activity if the difference between set goal and the achievement is smaller. In these conditions it is clear that the engagement and activity of all team members will drop.

That is the case if one side has an advantage of 35 points, 6-7 minutes before the end of the game, since it's unlikely that the opponent has a chance to catch up. It is the same with soccer, if one team in the last 6 to 7 minutes has to keep the score 4:0. Some situations that may have occurred but that apparently contradict this model, only present insufficient knowledge of the problems in life are more rarely (almost never) occur. It is the same with athletic competitions, when javelin thrower with his first throws, throws javelin and gets to the world record in maybe one meter. He can throw again, if he is in a top form, but it would be expected that he will get weaker with each throw, especially if the opponents throw few meters less than him. Moreover, they were prepared for these results and even if this is not known (which shouldn't be), sportsmen and trainers knew which is the range of their sportsmen they could expect. It seems to be different in boxing, since even when one player has huge scoring advantage, e.g. in the ninth round of professional fight, this doesn't mean that the opponent cannot set a strike which with the knock out can completely reverse the fight. But today this is hard to achieve, since the boxers are highly tactically prepared, so the fight in this conditions they routinely bring to an end. Not to mention that the one who received more punches has more difficulties controlling the fight, tries more to reverse the fight, and generally didn't take more punches by coincidence, so it is assumed in this fight he is the weaker one, which makes him more sensitive to qualify for beating the opponent. Obviously, the boxer with the advantage will strike less, risk less, avoid contact and "save" the time and with minimum activity attempt to win. In figure skating such thing is not possible, since in big competitions the opponent did not have his performance yet, since they are on ice one by one. The key significance is strict realization of prepared performance which assumes to be superior to the opponents. However, the skaters meet each other on the competitions and they know each other (trainers, scientist and the others "in the background" are doing their job), which means it can be expected what will the most direct rivals perform. Then this means that the skater has to have more than one scenario as a response. 2. - ***motion as a direct threat to achieving the goal***. In soccer that is kick toward goal, in boxing it is punching, in judo it's a maneuver which expects high scoring, in javelin maximum throw, figure skating complete realization of skater personality artistic effect. The motions that belong to this level are the ones the most directly achieve scoring (kick toward goal, throw at the basket...) especially when it comes to trial of relatively equal opponents. With individual, e.g. martial arts, the specialty of certain actions occur (punches, maneuvers...) that one sportsman maximally well controls. Certainly, with realizing the fact that there cannot be so many actions like this. In skating this is manifested as a part of choreography, repertoire, or any motion which is extremely difficult, aesthetically attractive and relatively rare, perhaps unexpectedly, and which achieves dominance over opponents.

In the javelin obviously this is not the motion itself, but an adequate engagement of the maximum energy while release devices since only the motion is "invariable" and assume technical but "perfect" overcome, and a change in the performance of motion would disturb it more than it would increase the result. On the level 3. - ***motions as a clear offensive action i.e. object*** transfer to the goal. Even there are examples where local goal (point in basketball) can be scored from distance (even from the opposite side of the field) such realizations are almost amazing and we only try them if the time has almost ran out (last seconds) and there is no other solution that it is unlikely that for such a short time it's possible to achieve a complete action. In most sport games on the level 3 is „the last pass“, the assistance that enables realization i.e. direct preparing for scoring. In javelin that is the last step before throwing the spear when the spear momentum ensures high speed at the moment of leaving the hand of a thrower and situation when spear reaches high speed at the moment when it's still in the hand of a thrower. In boxing this is movement that enables punching immediately before pointing. This is the last phase where there still is possibility of some kind of corrections or movement management. In figure skating this fits to achieving unity of skater's skills, choreography, music integration, and light fitting of heavier elements, in order to ensure the eventual special inspiration (dance couples). This is a moment of maximum sportsman concentration toward targeted realization. On the level 4. - ***motion for the activity concentration*** around the attributes which achieves the goal i.e. global offensive action, which performs a systematic organized pressure. In sport games this is organized collective transfer of the ball as close as possible to the goal with suitable action of few individuals that crates advantage in some part of the field where it's attempted to act directly with assistance or shooting. In martial arts this acting is expressed as opening opponent's defense for later placement of strike. In judo this acting is suitable to break the guard of the opponent after which it's possible to prepare and launch the action. In javelin obviously it's the matter of overtaking the device during the run, in order to ensure the maximum throw speed. In figure skating attack angle means winning "sympathy" of auditorium and judges by expressing personality in performance. It is necessary to differentiate this action from the one at level 3 when general superiority and integration of modalities and sport activities is required. It is quite possible that the skater achieves domination in concentration (level 4) but not in level 3. But certainly skater will not be the most successful if it doesn't achieve maximum at both levels, especially if there is more even ones who have the same justified pretensions to get to the top. On the level 5. - ***motion as a technique of using the infrastructure***, i.e. connecting previously agreed attack lines, which essentially presents space conquering. In order to implement the attack, lines of communication and resource transport have to be established.

It has to be familiar to all participants of the activity with execution of dynamic roles (Jiang, 2010). In sport games it is literally about achieving dynamic lines to implement possible ball transfers toward opponent's goal, in order to carry the ball into optimal trajectory for the given conditions. In martial arts, it is about fingering the attack, challenging without the actual attack, which leads the opponent to abort planned maneuver activities, and generally leads the opponent to uncertainty and general inferior (defensive) position. In javelin or high jump, conquering space is clearly set with rushing towards targeted realization. The most complex, although, logically completely equal in figure skating, where, with minimum deviations, predefined program is being realized (current prepared movement infrastructure) which is basis for realization of all other levels of higher order. On the level 6.- ***motion for expansion positioning*** i.e. explosive restructuring of individual position in order to create elusion in the opponents defensive lines. The aim is partial or complete deactivation (cutting off) of the opponent's resources in order to obstruct the integration into entire functional system of defense. This action obviously cannot be realized for one opponent if the majority the resources for both opponents is concentrated toward one target attribute of the other opponent (e.g. in front of the goal in soccer or "clinch" in boxing), so this action presents clear characteristic of sudden counterattack.

This action does not correspond to sudden drop before the goal when the described concentration is implemented, since then the opponent's defense is integrated. In soccer that is the sudden counterattack with few (1, 2,) rapid or long passing to poorly covered attacker. In boxing, judo etc, this corresponds to risky situation of sudden counterattack while the opponent was supposedly in the phase of complete attack and supposedly superior. In javelin or 100m race, this matches to strong start, i.e. initial rushing energy. In figure skating this means to realize more unusual movements of lower virtuosity level, intended to maintain audience attention, which may, in case of matched opponents, be the crucial in goal achievement, and therefore represents a turning point in the drama of performances. We have certainly noticed that this action not necessarily ends with goal achievement, and usually it doesn't, but it transforms into forming offensive structure and serves in this purpose. On the level 7. - ***motion for the solution of confrontation maximization which*** usually occurs in all other phases of opponent's trial. This debate here is particularly pronounced and visible. In the essence it is conceptual setting conflict and the most obvious is until no opponent gained space, rating or other advantages. In soccer e.g. we speak of strong engagement of resources, in the middle of the field, where one team is trying to impose their way of understanding and realization of the game to another team. This confrontation, sometimes, if the teams are matched potentials, lasts for the whole match with uncertain final result.

Generally, in any action, particularly in sport, the one opponent who succeeds in these intentions, regularly impose a way of trials and almost always wins a match. Today's training technologies to an excessive extent rely on this phase of performance, probably because of dominant and overemphasized role of trainers in sport activity model formation where they constantly make (often unnecessary) interventions in order to implement their personal ideas. Confrontation doesn't necessarily means the possibility of direct implementation of the objectives in terms of achieving such goals and presenting the skills of the motion, but only a constant tension in which opponents seek to achieve general domination in order to actually realize objectives of their activities. As we already mentioned, this tension is maximal while the result is uncertain, but with increase of certainty, this tension decreases, regardless which opponent has the advantage and whose fans are we. This acting (level 7) is very exhausting since with the result individual or team invest maximum efforts, but without evident achievement or approaching the goal, which can be discouraging, and can lead to complete exhaustion of one or more players. With matched teams in soccer this means very intensive game in the midfield, from the beginning. None of the opponents can achieve advantage but the intensity and engagement of everyone involved is significant. While in other phases we could expect increased involvement of group sets of individuals (defense, counterattack...) here literally everyone participate with maximum concentration and attention. In boxing this is a serious action with the aim to investigate basis of conceptual opponent's settings with constant high engagement and eventually find the weak spots that would enable placing a strike.

It is obvious, to implement this actions the team/individual have to be maximally prepared in every sense, condition, technical, tactical, cooperative,..., which means with bigger trials the risk would be too big to meet the opponent after the beginning, so in order of opponent's introduction, for realization of own conception, they are implementing observation of the opponent, analysis, simulations, sparring games etc. In javelin and high jump this is extremely important, since there is no direct confrontation; the understanding of the opponent (if he is matched) is extremely serious setting. Figure skating is not spared of these actions, which are trying to pre-compensate in the training procedure when preparing the concept of performance which itself tries to eliminate confrontation. If they do not succeed the solutions are found in risky elements which we assume the opponent does not master, or even if he does they are not on the level that enables supremacy in the evaluation of performance. In any case, the conflict of conceptual setting is a complex problem in training technology and requires participation of everyone engaged, especially experts of various profiles in the preparation of sports achievement and eventual final result. On the level 8. – ***motion in order to disrupt enemy activity along the deprivation of the right attack*** The right to implement attacking actions has each team/individual which implements this action within defined rules, respecting concrete physical conditions prepared through training and finally according to mastering technical-tactical ideas in trial. So the goal on this level is to act with taking the ball from the opponent in soccer and basketball to prevent shooting; in boxing obstruct the opponent so he cannot prepare the punch.

1. Victory
2. Direct threat
3. Attacking activity
4. Concentration to space conquer
5. Infrastructure utilization
6. Expansion positioning
7. Confrontation maximization
8. Attacking privilege withdraw
9. Organized defence
10. Space conquer obstruction
11. Opponent alienation
12. Threat & goal
13. Defeat

Figure 1. Classification structure (Bonacin, D.)

While with javelin or figure skating this phase is not actualized on the competition since it is transferred into spheres of psycho-social stability. In border areas, e.g. car racing we talk about overtake obstruction but in accordance with the rules. Certainly many other human activities do not have this phase in concrete conditions of assessment like chess, economy, science, education etc. In many of these activities, certain actions appear, but then they are labeled with legally and ethically unacceptable methods that present disturbance of general range within clearly agreed paradigm where they are realized. This level if it rationally included and existent, generally presents the first obvious defensive activity and its absence or neglect always leads to a bad position in trial with the opponent. On the level 9. – ***motion for the organized defense i.e. acting on the opponent's attack***. This phase starts when the previous (level 8.) is poorly developed and realized, and the opponent's has acute conceptual advantage. In that situation with engagement of all possible resources seeks to prevent further progress of the opponent. In soccer or in basketball it's an organized defense around own basket/goal, in boxing that is dodge left and right with punch blocking if it's possible in the middle distance, and in judo it's an attempt to enable performed strong opponent's guard. Skating, athletics, gymnastics etc, in this phase are specified with extreme engagement of experts specialists between two big competitions, but not during the performance which extrapolated this phase to future events and assessment of potential performance of own and opposing athletes. Even though in all activities, like sports, this extrapolation is clearly noticed, still it is dominant with described sports for the nonexistence of the direct contact between rivals on the sports field. It is interesting that in the same way are implemented actions in economy, science etc. On the level 10. – ***motion for the defense of the opponent's conquest of space***. If in fact, the opponent still has the right to attack (phase 8.) and the opponent has obvious conceptual advantage (phase 9.) then we have to prevent conquest of our space in the depth which more directly enables the opponent realization of his goals. In soccer this is ensured with kicking the ball forward or shooting into corner, out, while in boxing it's avoiding the fight, in judo it's sometimes leaving the battleground outside of marked area. These are actions that we reach after in situation of clear inferiority, but they are sometimes necessary in order to avoid concrete preparation of the opponent's successful attack. In sport games and martial arts, these actions are usually characterized by actions on the edge of permitted, where with series of small violations that are not always sanctioned, we try to disable the opponent when approaching out part of the field to implement his actions according to established infrastructure communication channels. In this phase arbitration (judges) is crucial since many inferior models in this phase find a space to disable the opponent, apparently maintaining the fast game/fight rhythm but with clear accent on the destruction.

Destruction is directed to opponent's model, but not on own expansion. On the level 11. – concrete attempts of ***motion for removal of an opponent from your own space*** where often it comes to the actions that are being sanctioned according to the rules. This can be foul i.e. hit the opponent's hand in the basketball; push the opponent in soccer, or penalties in judo or warnings in boxing. These actions are always sanctioned accordingly. This phase is characterized by acting on the entire opponent regardless his acute location but not at the object (ball, hand...) which endangers out integrity. This is for the reason that opponent controls majority of the "field" before his goal, so the acting on the object of endangerment is difficult, especially if the opponent has not only infrastructural, but also technically-tactical knowledge that lead us to inferior position and increase attacking tension with the realization goal. Quite often not so fair provocations which are used to prevent systematic action and preparation of concrete action precede the achievement of the opponent's goal. This is the phase where the opponent's realization is highly possible, which makes the defense unsuccessful, so receiving the goal, score, punch, throw etc is expected, which is the most serious threat.

On the level 12. – ***motion as a last attempt to defeat notions of enemy attempts to realization of final victory*** but in connection with receiving hits, hitting, and so forth. This means that the opponent succeeded to implement his ideas and realize the attack, but it is still not enough for the final victory. That is the situation when the ball enters out goal in soccer, series of scores in basketball, one or more clean punches in boxing or the action in judo that did not lead to *ippon* but certainly led to obvious point advantage. Depending on the level of general readiness, we take this opponent's realization in differently, which can be motivating where we engage energy, cognitions and other for out new attacks, but also depressing which can lead to tactical defeat or surrender. This is obviously an individual realization of an opponent that cumulatively can be decisive for the final result Trying to defeat is related to the ability to hit, kick, etc., and to receive a certain dose of compensatory and absorptive capacity, and possibly retain some degree of integrity sufficient to continue (Casti, 1991). This is the last available regular way to defend ourselves. But there is still the fact, that the opponent realized his goal, and it is not excluded that following all discoveries he will continue the same in an actual trial. It is obvious it is necessary to perform some interventions in order to stop this, for us unfavorable set of relations. In basketball there is time out, in boxing rest between a rounds, typical for soccer, baseball agreed signals, then player substitution, small tactical fouls etc. On the level 13. – ***motions as outcome of our defeat as targeted opponent's achievement***. If the opponent several times or at least more often or more intensely than us, realize his offensive actions shots, blows, etc., then the defeat is inevitable.

Realization of the opponent's goal leaves no possibility of a doubt in the final achievement, although sometimes the trials end with unresolved outcome, but long in the competition the winner can be obtained, so these outcomes are only transitive states toward the final outcome or result (Barndt, jr., 1991; Singhota & Dovey, 2005; Harms & Han, 2010).

From this discussion, logically, we excluded, situations of obvious plundering (judges, technical staff), the affects of external factors (audience, weather conditions), deliberate let up (sold games and matches) as all other conditions that might impair integrity of a group/individual (diseases, doping, illicit technology equipment,...) because with further analysis this situations will lead to this model, but with much more time and space, which is not so essential for this material and literally in no way undermines the credibility of all that is expressed (Beamish & Ritchie, 2004; Schot, 2005). Finally, we must stress that all these phases include a specialization in sports but in education there are no barriers for any child to expose itself to each of the phases mentioned. Just as in recreation, participants can include themselves in all phases in order to preserve the quality of life.

Movements

Movement classification is the procedure of defining general, paradigmatic, methodology, functional and structural starting point which enables basis identification for involving any movement of individual or group character in some activity (Bonacin, 2005).

Literature

- Argyris, C. (2004). *On organizational learning*. Malden MA: Blackwell Pub.
- Bloomfield, J., Polman, R., & O'Donoghue, P. (2004). The 'Bloomfield Movement Classification': Motion Analysis of Individual Players in Dynamic Movement Sports. *International Journal of Performance Analysis in Sport*, 4(2), 20-31.
- Bardram, J. (2004). Scenario-based design of cooperative systems. *Group Decision and Negotiation*, 9(3), 237-250.
- Barndt, jr., W.D. (1991). Profiling rival decision makers. *Journal of business strategy*, 12(1), 8-11.
- Beamish, R., & Ritchie, I. (2004). From Chivalrous 'Brothers-in-Arms' to the Eligible Athlete. *International Review for the Sociology of Sport*, 39(4), 355-371.
- Bernstein, A.M. (1947). *O postroenii dviženij*. [About movement organization. In Russian.]. Moscow: Fizkultura i sport.
- Bonacin, D. (2004). *Uvod u kvantitativne metode*. [Introduction to quantity methods. In Croatian.]. Kaštela: Personal edition.
- Bonacin, D. (2005). Comprehensive continuum. *Homo Sporticus*, 8(2), 16-20.
- Bonacin, D., & Blažević, S. (2006). Avant-garde model of motor abilities. In: Bala, G. (Ed.) *Anthropological status and physical activity of children and youth. Interdisciplinary scientific conference. Novi Sad*, Proceedings: pp. 39-44.
- Bonacin, D., Bilić, Ž., & Bonacin, Da. (2008). *Uvod u antropološku analizu*. [Introduction to anthropological analysis. In Croatian.]. Travnik: Faculty of Kinesiology.
- Bonacin, D., Bonacin, Da., & Bilić, Ž. (2009). Model and algorithm for hierarchical analysis. *Sport Science*, 2, (1), 78-83.
- Bonacin, D., Blažević, S., Bilić, Ž., & Bonacin, Da. (2010). *Uvod u kineziološku analizu*. [Introduction to kinesiological analysis. In Croatian.]. Travnik: Faculty of Education.
- Casti, J.L., (1991). *Searching for Certainty: What Scientists Can Know About the Future*. Seattle: Morrow.
- Chye, L., Nosaka, K., Murray, L., Edwards, D., & Thicbroom, E. (2010). Corticomotor excitability of wrist flexor and extensor muscles during active and passive movement. *Human movement science*, 29(4).

Based on all mentioned above it is obvious that movements as such do not depend on strategic and tactic goals especially in the phases where they are developed (Mechsner, 2003).

According to this, movement in sport (as well as any other activities) cannot be observed isolated from the other goals and realization phases so the preparation as well (training, transformation process, and learning) directly depends on those phases. Even though local models of certain activities can be changed (Enoka, 2008), mentioned phases will remain stable and unchanged, and their acceptance, sooner or later, will directly impact on all (not only) sports activities of a human being (Bonacin et al., 2008). It is clear, that each of phases requires some level of individual feature specialization, general and motor knowledge, as well as the base of other features, which means the selection is inevitably determined by the phase requirements.

Only then, with knowledge of possible concrete motion which will be realized in physical-psycho-social conditions in certain sport activity, it is possible to determine stimulus systems that will be accepted during phases of athlete's development (Piek et al., 2008; 2008) and tactical sub-models and all according to mentioned movement classification phases. It is expected in future that this classification will ease decision making of selection, transformation processes, development, control, supervision and evaluation of sports (and other) training of anthropologically defined complex being – a man (Ioakimidis, 2005; Bonacin & Blažević, 2006; Bonacin et al., 2010).

- Čhaidze, L.V. (1970). *Ob upravljenu dviženijami čeloveka*. [About human movement controlling. In Russian.]. Moscow: Fizkultura i sport.
- Enoka, R.M. (2008). *Neuromechanics of human movement*. Champaign IL: Human kinetics.
- Fod, A., Matarić, M.J., & Jenkins, O.C. (2004). Automated derivation of primitives for movement classification. *Autonomous robots*, 12(1), 39-54.
- Harms, P.D., & Han, G. (2010). Team identification, trust and conflict: a mediation model. *International Journal of conflict management*, 21(1), 20-43.
- Ioakimidis, M. (2007). Green Sport: A Game Everyone Wins. *The sport journal*, 10(2).
- Jiang, B. (2009). Ranking spaces for predicting human movement in an urban environment, *International Journal of Geographical Information Science*, 23(7), 823-837.
- Kleen, E.A.G. (1921). *Massage and medical gymnastics*. London: J & A Churchill.
- Luria, A.R. (1983). *Osnovi neuropsihologije*. [Basics of neuropsychology. In Serbian.]. Beograd: Nolit.
- Malacko, J. (2010). Integral interactive technology of training, business and organizational function in the preventive sports management of human resources. *Sport Science*, 3(1), 7-12.
- Mechsner, F. (2003). Gestalt Factors in Human Movement Coordination. *Gestalt Theory*, 25(4), 225-245.
- Michaelis, S. (2004). Mobility pattern detection for Quality of Service enhancements. *Inter-domain Performance and Simulation Workshop, Budapest*, March 2004. Available: http://www.ist-intermon.org/overview/ips_2004/ips2004_009.pdf.
- Murcia, J.A.M., Gonzales, D., & Perez, L.M.R. (2009). Self-determined motivation and physical education importance. *Human movement*, 10(1), 5-11.
- Opavsky, P. (1979). *Biomehanika*. [Biomechanics. In Serbian.]. Beograd: Naučna knjiga.
- Piek, J.P., Gasson, N., & Summers, J. (2008). Motor Control and Coordination across the Lifespan, (Article from 8th Motor Control & Human Skill Conference). *Human movement science*, 27(5), 665-667.
- Piek, J.P., Dawson, L., Smith, L.M., & Gasson, N. (2008). The role of early fine and gross motor development on later motor and cognitive ability, (Article from 8th Motor Control & Human Skill Conference). *Human movement science*, 27(5), 668-681.
- Schot, N. (2005). Negligent liability in sport. *Sports Law eJournal*, 1(1).
- Singhota, J., & Covey, K. (2005). Learning and knowing in teams: Lessons for business from professional sport. *Development and learning in organizations*, 19(3), 18-20.
- Stergiou, N. (Ed.) (2004). *Innovative Analyses of Human Movement*. Champaign IL: Human kinetics.
- Torlić, Ž., & Zečević, A. (1990). *Biomehanika*. [Biomechanics. In Bosnian.]. Sarajevo: Faculty of Phys. Education.
- Trew, M., & Everett, T. (2001). *Human movement – An introductory text*. London: Harcourt G.L.
- Walker, I. (Ed.) (2005). *Sports Psychology: the Will to Win*. New York: Peak Performance.

UNIVERZALNA KLASIFIKACIJA GIBANJA

Sažetak

Svrha ovog članka je prikaz Teorije univerzalne klasifikacije gibanja kao utvrđivanja nove paradigme koja je utemeljena na kompletnim antropološkim postulatima aktivnosti čovjeka općenito, pa i u kineziologiji. Dizajn, odnosno metodološki pristup je orijentiran prema dvije ekstremne situacije: a) postizanje cilja tj. pobjede, i b) ostvarivanje poraza, s konfrontacijom kao pojmom koji je očito lociran u samoj sredini između ova dva ekstrema i kojega intenzitet slabi sukladno približavanju jednom od ovih ekstrema. Analizom brojnih izvora literature, od kojih su navedeni samo ciljani izvori, moglo se pouzdano potvrditi opstojnost predložene teorije uz brojne rezultate koji teoriju potvrđuju. Pretpostavljeno je da paradigma praktično nema ograničenja, iako svakako treba ostaviti prostor drugim istraživačima da se okušaju u konkretnim operacionalnim idejama oslonjenim na paradigmu. Vrijednost članka je u potpuno novom teorijskom pristupu koji utemeljuje znanstvenu filozofiju gibanja, filozofije, kineziologije, ali jednako i drugih disciplina i aktivnosti čovjeka.

Ključne riječi: teorija, gibanje, klasifikacija, univerzalnost

Received: August 05, 2009.

Accepted: May 10, 2009.

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