The process of calculating the proportion of unproductive mental and physical movements and actions in a judoka's execution of techniques

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Abstract

Objective of the study was to detect the presence of an algorithm in the chain of cause-and-effect relationships that govern the probabilistic consolidation of ineffective intellectual and physical actions and movements of a young judoka during training and competition, enabling teachers to prevent the negative trend of memorization and the emergence of automatic errors in performance.

Methods and structure of the study. The study employed video analysis, cluster analysis, and descriptive statistics to examine the structural elements of movement. The research focused on a group of coaches from the Sambo – 70 Sports and Education Center, who evaluated the preconditions and causes of technical mistakes made by a young judoka in two competitive scenarios.

Results and conclusions. In the fundamental groups, it is not the preconditions that are determined, but the semantic structures of the direct activity format that mirror the substance of the appropriate practical advice from the instructor. The creation of a positive competitive experience for a young judoka should be grounded in the examination of semantic units within the algorithm of the ratio of ineffective intellectual and motor operations and actions to prevent the process of its transformation into an algorithm for their consolidation.

By dissecting the causes of mistakes through semantic analysis, we can discern the path for pedagogical influence to update the content of training and competitive activities.

Keywords: *judoka, confrontation with an opponent, ineffective intellectual-motor operations and actions, probabilistic consolidation, correlation algorithm, automated errors, warning.*

Introduction. Improving the structural components of training and competitive activities is associated with increasing the parameters of its efficiency and effectiveness in the segments of a motor operation, action and complex of actions that must be situationally adequate [7]. Considering the scientific issue of the emergence and consolidation of motor errors in the stereotypes of motor behavior of a young athlete, V.N. Platonov identifies 5 groups of reasons: “motor insufficiency – coordination, physical qualities, skill poverty; learning defect; psychogenic – poor self-control, psychological external influence, uncertainty, apprehension, fear..; unusual conditions – characteristics of the opponent, regulation of activity..; random) [8], which, in our opinion, are hierarchically linked and predetermined by the developing regulations of training and competitive confrontation with the opponent. At the level of motor operation, the reasons identified by V.N. Platonov are primary and isolated. At the level of the integral action and the specifics of its integration into a motor combination, a cause-and-effect relationship can be built between the large-scale influence of the “error – a prerequisite for a failure in efficiency” on the occurrence of the “error – an inef-

fective condition for implementing an action, accumulating in the “error of ineffective completion of an action, combination” taking into account the variability of the development of the situation. In the context under consideration, we are interested in, according to M.M. Bogen, the phase in the structure of the integral action – “definition of the content of a motor action as a way (method) of solving a motor problem, the characteristics of its operational composition with the number of operations included in the motor action” [3, 57 p.], which is predetermined, according to P.K. Anokhin – by situational afferentation, its perception at the intersection with memory as previous motor experience, motivation and the subsequent transition of this systemic formation to the decision-making stage [1, pp. 17-59]. Where is the process of movement control, according to N.A. Bernstein, is considered as "an active, purposeful system... based on sensory corrections, which present the principle of hierarchical, level control of movement" [2, pp. 373-392]. The resource for optimizing motor skills and abilities, according to N.D. Gordeeva, is "the peculiarities of the organization of serial sensorimotor actions" [4, 64 p.], where "the condition for generating a perfect action" is "productive chaos" [5, 116 p.] as the essential basis of productive search activity in self-determination of more rational parameters of movement and "reflection of the process of constructing an objective action" [6, 90 p.].

Objective of the study was to detect the presence of an algorithm in the chain of cause-and-effect relationships that govern the probabilistic consolidation of ineffective intellectual and physical actions and movements of a young judoka during training and competition, enabling teachers to prevent the negative trend of memorization and the emergence of automatic errors in performance.

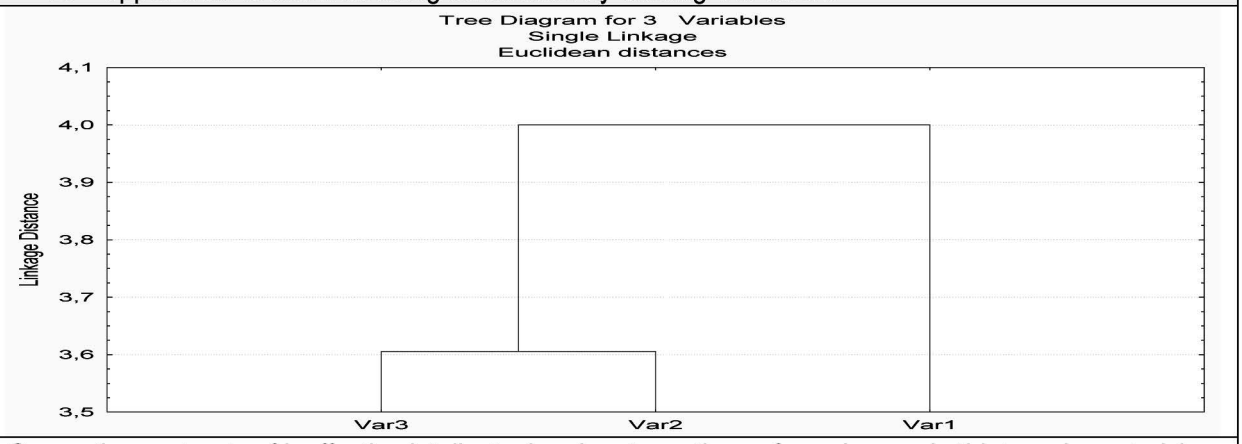
Methods and structure of the study. The following methods were used: video analysis of structural components of movement in the training and competitive activity of a young judoka; cluster analysis; methods of descriptive statistics. The study was conducted on a contingent of coaches (n=10) of the Sports and Education Center "Sambo-70", assessing the prerequisites and causes of technical errors in a young judoka in two intellectual-motor competitive situations, characterizing the presence of an emerging algorithm of ineffective intellectual-motor operations.

Results of the study and discussion. A reflexive self-analysis of the reasons for making an error, conducted on a contingent of young judokas, made it possible to identify semantic units: “got scared (played it safe) – was late with the moment of starting the action – chose the most predictable (readable) action by the opponent – did not have enough time to implement the maximum explosive effort – lost dynamic balance and lost the position of superiority over the opponent”. The figure shows the average values of the trainers' opinions on the hierarchy of reasons for the manifestation of errors. The young judoka (I.M.) states: “it went wrong”, but the algorithm of the movement can no longer be “broken”, since the influence of inertial forces, the vector of the opponent's effort during the confrontation and other factors is significant. We have identified a special co-organization of cause-and-effect relationships for making errors in the execution of movements of the first and second technical techniques and the filling of the basic clusters: despite the high significance rating (1,2) of factor 1.B. "did not take into account the low location of the opponent's center of mass", the basic cluster included characteristics of immediate activity-based bases (1.A. and 1.B.); similarly, despite the basic reason 2.B. "Was afraid of the opponent's psychological pressure (played it safe in his actions)" with a high significance rating, the lower basic cluster included 2.G. "was late with the start of the action" and 2.D. "chose the action most easily read by the opponent" – immediate characteristics of a segment of competitive confrontation.

Thus, the basic semantic constructs determine the content of the coach's practical recommendations: instead of the expected rating instruction "take into account the location of the center of mass", it is advisable according to the basic cluster to "master the technique in a low stance" and "take the opponent out of the balance zone"; instead of the instruction "do not be afraid", it is relevant to "perform the technical technique in a timely manner". It is obvious that cluster analysis does not have the function of semantic analysis, semantic interpretation of constructs, but mathematically turns us to an activity-based approach that ensures the correction of the ineffective intellectual and motor behavior of the athlete.

Conclusions. Prevention of the process of consolidation of motor errors in the motor memory of a young athlete is associated with the actualization of search intellectual-motor behavior when understanding the causes of the cumulative effect of technical errors in the implementation of motor operations and

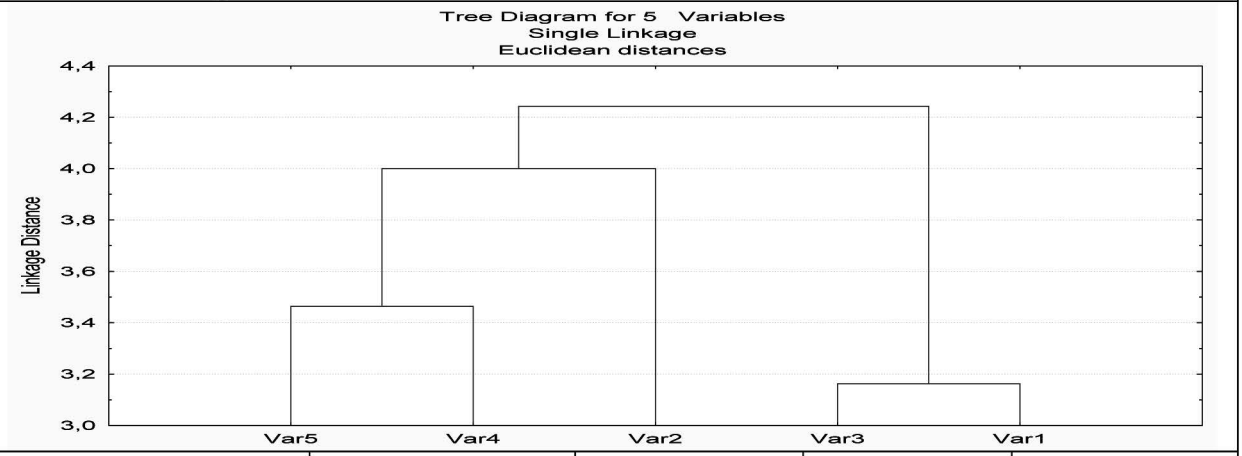
1. Judoist's technique: throw over the hip tangentially Uki-goshi.
2. Opponent's counter: throwing off balance by twisting Uki-otoshi.



Semantic constructs of ineffective intellectual and motor actions of coaches and athletes, characterizing a segment of competitive confrontation with an opponent

A. Did not take the opponent out of his balance zone (2.9). Poor self-control.	**B.** The technique has not been mastered in a low execution position (1.9). Lack of skill.	**C.** Did not take into account the low location of the opponent's center of mass (1,2). Features of the opponent.

3. Judoist's technique: throw across the chest Ura-nage. Opponent's counter: undercut from the inside Kouchi-gari.



2.A. There was not enough time to realize maximum explosive effort (4.1). Insufficient physical qualities.	**2.B**. Feared the psychological pressure of the opponent (played safe in his actions) (1.1). *Psychological external influence; uncertainty, fear.*	**2.C.** Lost dynamic balance, lost the position of superiority over the opponent (4.9). *Coordination deficiency.*	**2.G.** Delayed with the moment of commencement of action (2.1). *Unusual conditions of regulation of activity.*	**2.D.** Chose the most predictable (readable) action by the opponent (2.9). *Skill poverty.*

Pedagogical characteristics of the algorithm of the relationship between ineffective intellectual-motor operations and actions of a judoist (I.M.). Note: in italics – formulations according to V.N. Platonov.

actions, which requires an analysis of the structural units of cause-and-effect relationships in the identified algorithm. To form a positive competitive experience of a young judoka, it is extremely important that the algorithm of the relationship between ineffective intellectual-motor operations and the actions of a

judoka is not transformed into an algorithm for their consolidation.

Analysis of the causes of the development of ineffective intellectual-motor operations and actions requires specification of the problem area: insufficient level of formation of physical qualities or their presence against the background of the inability to implement in the conditions and regulations of competitive confrontation.

Reliance on the classification grounds for the occurrence of motor errors according to V.N. Platonov is important in their systematization for various sports, but when detailing the causes of errors in a specific sport, the semantic analysis of semantic constructs that reveal the direction of pedagogical influence on the construction of the content of training and competitive activities acquires particular significance.

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References

1. Anokhin P.K. Ocherki po fiziologii funktsionalnykh sistem. Moscow: Meditsina publ., 1975. pp. 17-59.
2. Bernshteyn N.A. Fiziologiya dvizheniy i aktivnost. Moscow: Nauka publ., 1990. pp. 373-392.
3. Bogen M.M. Obucheniye dvigatelnym deystviyam. Moscow: Fizkultura i sport publ., 1985. 192 p.
4. Gordeeva N.D., Evsevicheva I.V., Korneev A.A. Osobennosti organizatsii seriynykh sensomotornykh deystviy. Vestnik Moskovskogo universiteta. Seriya 14: Psikhologiya. 2007. No. 4. pp. 64-74.
5. Gordeeva N.D. Produktivnyy khaos kak usloviye porozhdeniya sovershennogo deystviya. Voprosy psikhologii. 2007. No. 3. pp. 116-126.
6. Gordeeva N.D., Zinchenko V.P. Rol refleksii v postroyenii predmetnogo deystviya. Refleksivnyye protsessy i upravleniye. 2002. Vol. 2. No. 2. 90 p.
7. Kuzmenko G.A. Kontseptsiya intellektualnogo razvitiya podrostkov v detsko-yunosheskom sporte. Moscow: MPGU publ., 2017. 212 p.
8. Platonov V.N. Podgotovka kvalifitsirovannykh sportsmenov. Moscow: Fizkultura i sport publ., 1986. 288 p.