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The result of "testing fights in a vertical posture" as a criterion of talent for combat sports and self-defence – secondary validation (part I: the reliability)

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Manuscript Preparation
E Funds Collection

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Abstract

Background & Study Aim: In the traditional approach to predicting and selecting youth for sport, the following are enumerated: physical fitness, motor skills, mental predispositions, or health status. On the basis of many of the measured characteristics of athletes at the highest level of sports championships and statistical processing of this information, conclusions and recommendations concerning the choice and selection for a particular sports discipline are formulated. This study aims at the secondary validation (only reliability aspect) of the result of "testing fights in a vertical posture" (TFVP) as a criterion of talent for combat sports and self-defence.

Material & Methods: The published and yet unpublished results of research with the use of TFVP (50 male at the age of 19 to 44 years) were subjected to secondary analysis. TFVP indicators in the testing (competitive) groups (in this part 4 to 5 people) with a similar or identical body weight were correlated with indices of motor tests and with the body weight. The reliability measured by test-retest method.

Results: A low and very low correlation of both empirical variables is a regularity, and in some empirical systems (with the opponents' similar body weight) is not statistically significant. The body weight factor interacts with TFVP efficiency indices if the difference in body mass is ≥ 5 kg. The reliability of the test is proved by a high correlation of points ($r = 0.855$) between each repetition of the TFVP (for the place in the testing group $r = 0.833$).

Conclusions: TFVP efficiency indices meet the criteria of synthetic measures of talent for combat sports and self-defence. TFVP, due to a simple and safe formula, can be commonly used in health-related training, sport for all, in physical education classes, sport training, etc.

Key words: accuracy • experiments • non-apparatus test • scuffle • stability • test-retest method

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Validation – the action of checking or proving the validity or accuracy of something (*Oxford Dictionaries*).

Accuracy – the quality or state of being correct or precise (*Oxford Dictionaries*); **accuracy** in parts of methodological books is synonymous of **validity** (degree to which a test or instrument measures what it purports to measure; can be categorized as *logical, content, criterion, or construct validity* [40, p. 193]), whereas **validity** (relevance) include **accuracy** and **reliability**.

Stability – a coefficient of reliability measured by the test-retest method on different days [40, p. 200]

Test-retest method – method of determining stability in which a test is given one day and then administered exactly as before a day or so later [40, p. 200]

Scuffle – a short, confused fight or struggle at close quarters (in TFVP fights in the vertical posture based on the simplest forms of pressure on the opponent's body); differently than **encounter** (conflict, dash) in praxeology: the fight destructive during the impact phase at each of two warring parties (both sides attacking either one attacking and the other counterattacking [41, p. 231]

Perceptual sentence – in the methodological meaning is constative utterance the result of some observation (result of the measurement) [35].

Non-apparatus test – that motoric test (exercise endurance test) of the required reliability (accurate and reliable), which use does not require even the simplest instruments [36].

Introduction

In the traditional approach to predicting and selecting youth for sport, the following are enumerated: physical fitness, motor skills, mental predispositions, or health status [1-5]. Not surprisingly, as the vast majority of empirical data collected over several decades and associated with tangible results concern individual sports: athletics, swimming, weightlifting, cycling, skiing, rowing, shooting, etc. Although in the choice and selection of candidates for team games the importance of individual predispositions to actions during a game is emphasized [6-8], the recommendations mentioned above are insufficient. Experts draw attention to intelligence and motivation [8] as well as interdisposition [6, 7] towards offensive and defensive actions (or with a clear focus on just one of these factors).

Some authors – on both "energy" sports and games and combat sports – focus on "talent" [9-16], although in principle the analytical approach dominates. That is to say, on the basis of many of the measured characteristics of athletes at the highest level of sports championships and statistical processing of this information, conclusions and recommendations concerning the choice and selection for a particular sports discipline are formulated. Authors of such works do not always use the word "talent" in the publication title, but the methodological approach is identical [17, 18].

There are a few elements that limit the effectiveness of this methodological approach. One can even talk about a crisis of the sport science and sport medicine paradigm at the crossroads of social coordination of sports activities. Firstly, eminent coaches and their scientific and medical advisers have knowledge of the champions' characteristics and personality, but a lack of unification of methods, tests (tools), indicators, etc. paradoxically complicates this diversity of an objective observation of these phenomena from the stage of initial training through long-term training to sports championship. Secondly, due to the number and the diversity of sports disciplines and events, it would be preposterous to conclude about universal predispositions to sport. So even systemic monitoring of basic indicators of positive health (including physical fitness) during childhood and adolescence does not meet the criteria for selecting the most talented youth with an indication of a specific sport discipline. Thirdly, choice of the most talented people for a given sport and then selection of those who can achieve results at the Olympic and the World Championships level already at the outset are limited by the number of subjects and, even more so, by the availability of the given sport.

This third element is so important that it deserves more elaboration. Contrary to the propaganda slogan of "sport for health" and similar ones, the availability of disciplines that would satiate the need for satisfaction with practicing a favourite "sport or sports of life" by a particular person is still limited (even in rich countries). A chance to participate in the stage of a possible selection to professional sport (even so calculated only for a few or a dozen years of career) should only be a possibility and nothing more. Meanwhile, the social pressure on sports success has been unabated since the days when it was a key factor in the rivalry between two antagonized blocks of countries with disparate political systems. Thus a model based on selection subordinated to criteria of professional sport (preference for "prospective" candidates and eliminating the others) dominates. This model is strengthened by media that fashion sports champions as top celebrities. Hence there are plenty of adepts hoping for even an ephemeral sports career at any cost – paying no heed to health hazards.

In the social space, the model of "sport as a career" has dominated over the model of "sport for health". And yet satiating the need for satisfaction, in this case, with practicing "sport or sports of life" is one of the most reliable indicators of mental health. If a person derives satisfaction from regular participation in team games, such activity is simultaneously one of the indicators of social health.

Both models are two different professional approaches to sport which are differed in the main strategic objectives. The second model is not as attractive for the media, or coordinators of social life, as the first one. Dazzling viewers with sport celebrities' earnings, scandals involving champions, etc. is *the news of the day* (i.e., the sensation desired by the media). Permanent monitoring of the effects of civilization diseases caused by physical inactivity, informing that it is one of the reasons for the escalation of violence and aggression among youth who, by no fault of their own, cannot practice sports, etc. could ruin many political and professional careers.

Research reports on resignation already in the first weeks and months from further training [19-22] are indirect evidence that dreams of a sports career, thus becoming a celebrity or pressure from parents

or other people from the adept's closest circles, etc. [23,24] are fundamental in individual choices of a particular sport. If such a quick resignation regards sports of a utilitarian nature (these include combat sports [25]), then a young person often permanently loses an opportunity to enhance the quality of his/her own life, measured with an increased sense of personal safety, resistance to stress, an ability to overcome difficult situations, an awareness of qualifications opening a possibility to gain a unique, attractive profession (so many contemporary actors prove the motor competence of martial arts), etc.

Giving up sport does not have to result from direct experience. Knowledge of the motor criteria that champions should meet may be a factor hindering the intention to train. However, from the perspective of scientific cognition, knowledge of these criteria is an elementary prerequisite to raise an issue: are very high indices of motor abilities (strength, speed, endurance, agility, flexibility) a result of long-term training, or were champions distinguished by these indices from their peers already before taking up training, or is it a cumulative effect of specific motor abilities and the impact of training?

If the second and third options are true, also the hypothesis which is verified in this paper on the basis of multi-year experiments should be true.

Hypothesis: persons who have not trained combat sports earlier but outperform their peers in motor abilities should win fights in the vertical posture based on the simplest forms of pressure on the opponent's body (pushing beyond the determined contest area, secure putting out of balance, etc.), i.e. without a use of sophisticated techniques (throws, grips, blows, etc.); if such fights are also won by persons inferior to their opponents in terms of motor abilities, it means that the sum of motor indicators cannot be an objective measure of talent for combat sports and self-defence; however, the result of several "testing fights in a vertical posture" (TFVP) consecutive in a short period of time would meet the methodological criteria of a synthetic measure of such talent (it can be owned by both people with very high motor potential and persons with low indicators of motor abilities).

Since for nearly half a century in numerous scientific publications authors have recommended multiple-element batteries of motoric tests as criteria of talent for individual combat sports athletes, and since there is a large variety of these tests, valid is a conclusion that this paradigm is based on a false assumption that anyone can learn to fight, but ultimately persons with the highest potential of motor abilities win will.

Yet surprising are disproportions between the recommendations of standards in identical tests by different authors either within a given combat sport or as a criterion for positive health.

Thirty years ago Kaplin [26] published standards of physical preparation for judo athletes related to the so-called directed stage of training in a long-term cycle (the average period regards 4-5 years of training [27], which corresponds to a junior's age: 17-19 years). Of 18 tests (including variants), Kaplin recommends e.g. the maximum number of 50 pull-ups for judo athletes of the then weight categories –65 kg and –71 kg, while 45 for the –60 kg, –78 kg, –86 kg categories, 35 for the –95 kg category and 20 for +95 kg category. Standards of the standing broad jump are already less diverse: 265 cm for the category of –95 kg, 245 cm for –60 kg and 250 cm for the remaining ones [26].

On the basis of a long-term observation of the population of Polish juvenile judo athletes, among the most diagnostic motor abilities indicators for 17-year-old judo athletes, Jagiełło [28] defined the following standards as a high criterion: 18 pull-ups and 264 cm in standing broad jump. According to standards of the International Committee on the Standardisation of Physical Fitness Test, for 17-year-old boys (chronological age) the point criteria for these tests according to the T-scale amount to: 80 points in pull-up and 68 points in standing broad jump [29].

This study aims at the secondary validation (only reliability aspect) of the result of "testing fights in a vertical posture" (TFVP) as a criterion of talent for combat sports and self-defence.

Material and methods

Premises, assumptions, protocols, participants

1st prototype of TFVP: *four judo fights according to a simplified formula, in the system* of *"everybody with everybody else"* as part of "defence biathlon" (DB) – as the second task (the first task being 800 m run ended with shooting a pistol, 5 shots, to an immovable target at a distance of 25 m); 5-person test (competition) groups (TG) of similar weight are subject to evaluation [30].

During fight the general provisions of the judo discipline apply with the following simplifications: weight categories are not applied (the difference in each competition group should not exceed 5 kg); the time of each fight is 3 minutes with a possibility of completing the fight earlier; another fight not earlier than after 3 minutes since the end of the previous one; penalties for leaving the contest area do not apply (6x6 m or 5x5 m on a minimum tatami surface of 8x8 m) unless there is a clear intention to avoid fighting; penalties for a defensive way of resolving the fight until 2 minutes do not apply (after 20 seconds *shido* penalty, after another 20 s *chui* penalty, etc.); in case of an equal number of points after the fight, a tie (*hiki wake*) is announced.

The evaluation of the result of individual fights for the DB purposes is made according to the following criteria: 0 points victory; 1 points *hiki wake*; 3 points lost by *koka* (according to the old rules of judo combat) or *shido* penalty; 5 points lost by *yuko* or *chui* penalty; 7 points lost by *waza-ari* or *keikoku* penalty; 10 points lost by *ippon* or disqualification (*hansoku-make*), obtaining *waza-ari* by the opponent.

During two experiments [31, 32] 45 military cadets (age: 19 to 23 years; height 170.5 to 191 cm; weight 55 to 98 kg) were examined, including those specializing in various sport disciplines, and the results were correlated with specific military tests indicators.

2nd prototype TFVP (non-apparatus test)***:*** *four sumo fights according to the simplified formula, in the system of "everybody with everybody else"* as part of "defence biathlon: 1st didactic version" (DB:1stDV) – as the second task (the first task being a zigzag run and 20 m run followed by 4 dart throws at a dartboard located at a distance of 2 m); 5-person test (competition) groups are subject to evaluation [33].

A fight is conducted on a soft surface (preferably on tatami mattresses) until one of the competitors wins in four scuffle. The contest area is made of space within a circle with a diameter of 3.6 m. Each scuffle aims at pushing the opponent outside the contest area or making him/her touch the ground with a part of the body other than feet. Any resumption of the fight is when the opponents assume a posture of a supported squat on both fists in the middle of the contest area and start fighting at a signal (see http://smaes.archbudo.com/page/display/id/14/title/testing-fights-in-a-vertical-posture). Breaks between fights stem from the duration of individual duels (a break cannot be shorter than the time of the previous fight).

The result of the fight is assessed on the basis of the following criteria: 0 points – victory; 3 points – losing 3:4; 5 points – losing 2:4; 7 points – losing 1:4; 10 points – losing 0:4. The possible extreme results range from 0 points (a person who will win all the fights and all the scuffles) to 40 points (person who loses all the fights every time with a score 0:4).

During the experiment 5 PE officers, experts of fitness preparation of military pilots, were studied; they significantly differed in age (26 to 44 years), height (166 to 176 cm) and weight (63 to 85 kg). The subjects fought in sports attire on a tatami mat without footwear: a tshirt, shorts, belt.

The correct version of TFVP (*four sumo fights according to the simplified formula, in the system of "everybody with everybody else"*) and specific application of TFVP they will be described in part II (separate publication).

During 4 experiments [31-34], the study involved 50 people, aged 19 to 45 years, who conducted TFVP in four- and five persons TG. The results were correlated with body mass and military tests.

Appropriate bioethical committees approved of all the experiments.

RESULTS

1. Pilot study

1st prototype of TFVP

In the first stage of research, 20 military cadets of ground forces competed (according to the criteria of the second DB task) in four-person TG, in accordance with their preferred sports discipline: athletics, judo, obstacle run, patrol run, shooting, while in the fifth group one cadet trained kick-boxing and the others did not practice any sports [31]. All of them met the criteria of grade "excellent" in Physical Education class, including their assessment of hand-to-hand fight (HTHF) skills (quality of execution of the safe fall, offensive and defensive technique) as very good (5) and good (4). In the second stage of research (2 months later), winners of the first stage of research composed the first test group, those who took second and third places in the first stage composed the second group, and the third ones consisted of those who took third or fourth place during competition in their preferred sports (each of the five TG was represented by a representative of a different sport, and in the second and third one there was also one cadet

who did not train any sport). In the second stage participated 15 cadets.

Only the kick-boxer in both stages of the study won in all the fights (Table 1). The judo athlete who during the first stage of research took first place in the homogeneous TG (i.e. defeated other judo athletes) finished at the 5th (last) place in the TG of five leaders from the previous competition (stage I). The judo athlete who took 4th place in the homogenous TG was in the most comfortable position. In the second stage he fought against representatives of other sport disciplines and those not training sports who in a homogeneous TG took 3rd or 4th places, but still he only tied with the cadet not training sport. In the ranking based on the arithmetic mean of indices of the second stage of the test fights, judo athletes took the 2nd place after the kick-boxer and before those training athletics, with the same index of the average place in the TG (Table 2). There were no statistically significant correlations between the HTHF assessment according to the military and the ranking based on points in both stages of judo fights according to the simplified formula (Table 1).

In a similar experiment [32], we examined 25 cadets of the Military University of Technology, who in the first phase competed in a homogenous five-person TG: athletics (runners at middle distances), judo, patrol run, shooting, swimming. At both stages the cadets fought after a run of 800 m completed with shooting a pistol, 5 shots at an immovable target at a distance of 25 m (the first task of DB). Judo athletes in the TG of the second stage won three times and twice took second place (Figure 1). As in the previous experiment, cadets training athletics were ranked

Table 1. Results of *judo fights according to the simplified formula* in both stages of the study of military cadets of ground forces (n = 15) training various sports disciplines.

Sport practice (or no)	Evaluation (HTHF)	Results of task 2 DB				Sum of		Ranking position	
		stage I		stage II					
		place in TG	points	place in TG	points	place in TG	points	two criterion (place in TG and points)	only sum of place in TG
Kick-boxing	5	**1**	0	**1**	0	**2**	0	**1**	**1**
Athletic	5	**1**	7	**2**	10	**3**	17	**2**	**2**
Judo	5	**2**	10	**1**	10	**3**	20	**3**	
Shooting	4	**1**	10	**3**	11	**4**	21	**4**	**3**
Obstacle run	5	**1**	0	**4**	17	**5**	17	**5**	
Judo	5	**4**	30	**1**	1	**5**	31	**6**	**4**
No sport raining	5	**2**	11	**2-4**	30	**5**	41	**7**	
Obstacle run	5	**2**	13	**2-4**	30	**5**	43	**8**	
Judo	5	**1**	0	**5**	25	**6**	25	**9**	
Athletic	4	**4**	20	**2**	10	**6**	30	**10**	**5**
Obstacle run	5	**3**	20	**3**	11	**6**	31	**11**	
Athletic	5	**3**	16	**2-4**	30	**6**	46	**12**	
Shooting	4	**4**	20	**4**	30	**8**	50	**13**	**6**
Shooting	5	**3**	11	**5**	40	**8**	51	**14**	
No sport training	5	**4**	21	**5**	31	**9**	52	**15**	**7**
Average	**4.80**		**12.6**		**19.07**	Correlation		Evaluation HTHF	Stage I: points
SD	0.414		8.765		12.435	Stage I: points		–0.240	
Min-max	4 ÷ 5		0 ÷ 30		0 ÷ 40	Stage II: points		0.086	0.011

Table 2. The results of fighting based on *judo fights according to the simplified formula* in stage II of the study of military cadets of ground forces (n = 15) training various sports disciplines (in the ranking based on the arithmetic mean of criterion: place in TG; points)

Criterion ranking (stage II)	Kick-boxing (n= 1)	Judo (n= 3)	Athletic (n= 3)	Obstacle run (n= 3)	Shooting (n= 3)	No sport training (n= 2)
Place in TG	1	2.33	2.33	3.33	4	4
Points	0	12	16.67	19.33	27	30.5

behind judo athletes. The effectiveness of fights measured by the mean position in the TG indicates similar capabilities of cadets training athletics, shooting, and patrol run (2.6 to 3.4), who are superior by one level to those training swimming. The intensity of fights (measured by the HR) was slightly higher in the first stage of the research (when the fights were fought in homogeneous TGs), with the highest variability of the HR among shooting athletes testifying that some of them had problems with optimal coping with this specific effort (Table 3).

2nd prototype of TFVP

In the first application of the TFVP basics in sumo fights according to the simplified formula (DB:1stDV [33]) 5 PE officers, experts of fitness preparation of military pilots were studied. A statistically significant ($p<0.02$) correlation between body weight and the result of fights ($r = 0.940$) was found. The average time of fighting amounted to 75.5 s (29 to 120 s) and mean HR was 187.5 (175 to 200 beats/min), proving the involvement of mainly aerobic-anaerobic metabolism in such efforts. The winner of all test fights and the

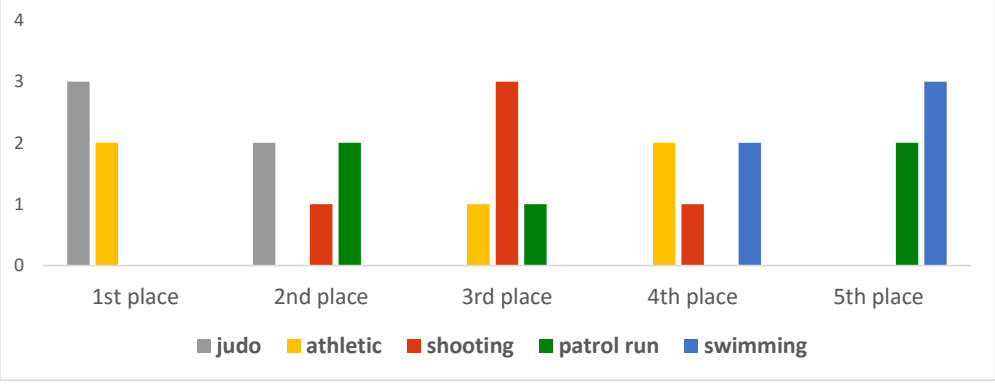

Figure 1. Place in the TG (*judo fights according to the simplified formula*) during the second phase of the study of cadets of the Military University of Technology (n = 25) training various sports disciplines.

Table 3. The mean value and variability of the place in the TG (*judo fights according to the simplified formula*) during the second stage of the study of cadets of the Military University of Technology (n = 25) training various sports disciplines and the intensity of effort during TFVP in both stages of the study.

Stage of research	Judo (n = 5)	Athletic (n = 5)	Shooting (n = 5)	Patrol run (n = 5)	Swimming (n = 5)
	place in TG				
Stage II	1.4	2.6	3	3.4	4.6
	intensity of effort during fights measured by the HR (SD) min ÷ max				
Stage I	169.08 ±10.5 160 ÷ 187	164.16 ±6.3 157 ÷ 172	175.08 ±33.77 142 ÷ 210	170.88 ±4.58 165 ÷ 177	168.36 ±9.34 154 ÷ 178
Stage II	162.72 ±13.6 151 ÷ 184	159.6 ±3.77 156 ÷ 165	175.2 (±20.77) 148 ÷ 204	165.6 ±10.3 151 ÷ 174	168.9 ±6.13 160 ÷ 174

DB:1stDV ones was 38 years old and was younger than the runner-up (also the second in DB:1stDV) by 6 years. However, he was the heaviest (85 kg): heavier than the runner-up by 10 kg and then the third one by 18 kg and then the last one by as much as 22 kg. Neither the age nor the body height significantly correlated with any of the empirical variables.

2. The appropriate study

2.1. The reliability of TFVP

The basic validation procedure (reliability measured by means of the "test-retest" method) was based on the results of fights of 30 cadets of the Military University of Technology in Warsaw, Poland (Table 4), who at an interval of 10 days fought twice in five-person TG (in accordance with the criteria of the 2nd prototype of TFVP). In each TG the difference in the body weight did not exceed 3kg. None of the cadets had trained combat sports before. The reliability of the test is proved by a high correlation of points (r = **0.855**) between each repetition of the TFVP (for the place in the TG, r = **0.833**). We found that the body weight with so little intrapersonal variation in the TG is not statistically significantly correlated with the result of the fought fights (r = 0.183), which in a sense is a proof of the test reliability [34].

An in-depth assessment of reliability was also verified by other statistical methods (Table 4). The study results considered as 6 five-element trials (test of comparing variances) showed that the variances in two independent studies are within the limits of statistical error (the calculated value of statistics is much lower than the critical value). The results of fights expressed in points are concentrated around the mean (partial check of the normality of distribution – in most cases 60% of data belongs to a designated interval). The result would have been even better if not for the repeated "0" index in each TG, which means extremely highest efficiency during TFVP. On the other hand, the applied predicted value test proves that the indicators of the test and the re-test fall within the limits of statistical error. High values of Spearman's rank correlation mean that the subjects' places in the TG at both stages of the study are similar (for the majority of aggregates, the p-value directional test amounts to 0.900, i.e. it meets the criteria for $\alpha = 0.05$). With equal points, a higher place in the TG is decided by the result of a direct the result of the fought fight of these two subjects (TG II test, TG VI retest).

The most stable results measured jointly by the place in the TG and points apply to all leaders (they won twice in all TFVP). The stability measured only by the place in the TG also applies to all who took the last place. However, during the retest, except for the last one in the TG IV, others reduced the number of points giving information on the extent of defeat (the extreme negative result is 40 points). Therefore, in the case of these cadets, adaptive tendencies were revealed. The best adaptive tendency, measured by the mean place in the TG during the retest was revealed by cadets who were classified at place 4 during the test (retest: 3.17). The opposite is the result of those classified at the 2nd place (retest: 2.83).

Summary of the first research stage

Extensive empirical data that we gathered over 18 years of research and editorial constraints are the main reasons why the structure and the content of this paper departs from the traditional layout of an original work. The multitude of ideas and experiments and, at the same time, a need to pass on knowledge in the simplest and most lucid way necessitate departing from the rule of formulating only the so-called perceptual sentences in the "Results" section [35]. It is easier to follow the reasoning if the description of particular experiments is preceded by the necessary premises, assumptions, specific questions, when the basic information on subjects, testing circumstances, etc. is given. Therefore, we believe that formulating the most important explanatory hypotheses and preliminary conclusions in the course of presenting the results already in the "Results" section is the optimal methodological solution.

The reliability of TFVP has been proven. TFVP, with all their specificity and originality, qualify for the category of non-apparatus of the diagnostic tools [36]. The use of a stopwatch to measure the time of individual fights or the HR is already associated with other objectives and research tasks. Documenting results of each fight during a TFVP is a prerequisite to calculate indices being a basis for an analysis of the phenomenon of talent for combat sports and self-defence in a simple way. The time and the intensity of fighting constitute information extending knowledge of subjects' adaptive capabilities in particular circumstances. They are not directly related to this talent. The body reacts differently to effort during a fight with the same person if either party is under the influence of a strong modifying stimulus (illness, a high level of fitness preparation, etc.).

Table 4. The reliability measured by means of the "test-retest" method (30 cadets of the Military University of Technology in Warsaw, Poland)

TG	Points		Stage	M	s^2	s	Test result for comparison		Verification of normal distribution			Place in TG		Spearman's rank correlation
	test	retest					s^{2*}	expectation**	M – s	M + s	%	test	retest	
I	0	0	test	12.8	79	8.88	1.287	0.067	3.91	21.68	60	1	1	0.7
			retest	13.2	61.3	7.83	equal	equal	5.36	21.03	60			
	5	18					s^2	M				2	4	
	17	10										3	2	
	18	15										4	3	
	24	23										5	5	
II	0	0	test	15.4	116	10.78	1.214	0.164	4.61	26.12	60	1	1	0.9#
			retest	14.2	95.7	9.83	equal	equal	4.41	23.98	60			
	10	7					s^2	M				2	2	
	17	22										3	4	
	17	15										4	3	
	33	27										5	5	
III	0	0	test	14.8	70.2	8.37	1.078	0.463	6.42	23.17	60	1	1	0.6
			retest	12	75.6	8.69	equal	equal	3.30	20.69	60			
	14	20					s^2	M				2	4	
	15	12										3	3	
	20	5										4	2	
	25	23										5	5	
IV	0	0	test	13.2	97.4	9.86	1.683	0.032	3.33	23.06	40	1	1	1##
			retest	13.4	57.8	7.60	equal	equal	5.79	21	80			
	3	7					s^2	M				2	2	
	18	8										3	3	
	20	20										4	4	
	25	25										5	5	
V	0	0	test	12.4	142	11.9	2.031	0.274	0.49	24.3	60	1	1	0.9#
			retest	10.4	69.8	8.35	equal	equal	2.04	18.75	60			
	3	5					s^2	M				2	2	
	12	15										3	4	
	13	8										4	3	
	34	24										5	5	
VI	0	0	test	16.6	148	12.1	1.122	0.214	4.42	28.77	60	1	1	0.9#
			retest	14.8	132	11.49	equal	equal	3.30	26.29	60			
	10	10					s^2	M				2	3	
	17	10										3	2	
	19	20										4	4	
	37	34										5	5	

*critical region C = 6.39 for α = 0.05; **critical region C = 2.307 for α = 0.05; p-value directional test: #0.900 for α = 0.05; ##1.000 for α = 0.05; **TG** testing group; **M** arithmetic mean; s^2 variance; **s** standard deviation

It is the talent for combat sports and self-defence that is a key issue, and TFVP is a tool that is to reveal this property of man. However, a structured evaluation of the validation procedure of TFVP and a synthesis of empirical data can be reasonably made after examining the evidence proving the **accuracy** (see glossary on the margin, p. 230)) of this tool. The specificity of this research tool is also based on the fact that a significant part of empirical data is at the border of the reliability and the accuracy of evidence.

This borderland area is somehow designated by the very idea of measuring talent for combat sports and self-defence. In most combat sports there is a rule of grouping athletes according to weight categories. In the field of self-defence this criterion can have at most a symbolic significance – during intervention actions of “a group against a group” type, when it comes to a direct clash (encounter) of opponents, a reasonable tactic is to fight individual fights by persons with a somatic similarity [25, 37-39]. An open question remains whether either of the opponents, or possibly both, resolve on such tactics of fighting. The content of this paragraph, in a sense, is the basic premise of the next methodological step: an analysis of empirical data on the validity (relevance) of TFVP and the issues from the borderline of reliability and accuracy. It is only the entirety of this knowledge that gives a basis for formulating recommendations for further research and the relevant application in different spheres of practicality (education of youth, health-related training, training of defensive units, etc.).

Precisely in view of the extensive empirical resources, Part I has been limited to the issue of TFVP reliability. Other results of our longstanding research dedicated to the accuracy, in-depth knowledge on the validity (relevance) of this particular tool of diagnosing talent for combat sports and self-defence and recommendations will be presented in the second part, which will also be published in the journal *Archives of Budo Science of Martial Arts and Extreme Sports*.

Competing interests

Authors have declared that no competing interest exists.

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