PROBLEMATIC ASPECTS ON TESTS AND CONTROL RULES FOR STUDENT'S PHYSICAL TRAINING IN SELF DEFENSE LESSONS

Aspecte problematice despre probele și normele de control în Auto Apărarea fizică pentru studenți

NEGOESCU Mihai-Cristian

State University of Physical Education and Sport, Chisinau, Republic of Moldova * Corresponding author: negoescumihaicristian@gmail.com

Abstract

Background. This scientific study is aimed at documenting the shortcomings regarding the tests and control rules of general physical training required in Self Defense for students. In the scientific literature we have found only tests and control rules focused on a specific sport discipline and without considering the extensive and complex problem of Self Defense. Additionally, we have not found the motivational factor for choosing the test and the control rule considered !

Objectives. Is to aim, to correlate and explain the tests and control rules of physical and sports education that we have found in the literature and which we deem as useful in general physical education for students as it comes out of the necessities in the field Self Defense from Martial Arts.

Methods. The scientific methods used by us are the method of investigation, the method of the experts, the method of questioning by defining the nature of the issue and the method of the bibliographic study.

Conclusion. We selected 13 tests in different formats (abdominals "jackknives", squats, push ups, two handed fixed bar pull up, extensions of the trunk, (adapted) throw of the round ball, speed running 400 m (sprint with standing start), long distance running - resistance (Test Cooper 12 min equal as test of V.O₂ max.), long jump in running (with landing on one's feet), triple jump in running (with landing on one's feet], osteoarticularocoxofemoral mobility, relay tests 10 repetitions x 10 meters with various and diverse utilitarian applicative exercises, burpee exercise-"Korean push ups".) and their related control rules (conditions of execution and the number of repetitions performed). These results imply the following problematic aspects : the synthetic environment where the testing are made (in the sport disciplines takes place) versus the real natural environment where the physical confrontation occur, the training and the general physical condition (initial and intermediary) of the student. Because current student is poorly trained from the mental, physical and motric point of view we take 0 (ZERO) as initial starting point of measure unit (for multiple and various reasons) and we track the students individual progress.

The control rule by which statistics are to be accounted for shall take into account the resource consumption efficiency, the reduction of post effort recovery and rebuilding time, and the psychological comfort of the performer, correlated with exceeding the individual record for each and every student. We also considered here the individualization of the physical training (individualization of the requirements for the execution of the test adapted to the environment in which the physical confrontation takes place, but also the individualization according to the genetic, medical, anthropological, physiological, etc. particular biotype of each student) as evidenced by the scientific literature and in the studies on current student groups showing heterogeneity from all points of view.

Keywords : students, physical training, tests, norms, control, Self Defense

Introduction

The purpose of this paper is to find a scientific foundation for physical tests and control rules applicable to students in Self Defense lessons, so that, according to them, can be made scientific statistical studies on special psycho physical and motor development adapted to Self Defense to students. We consider that this issue of control rules and tests related to physical training in Self Defense for students is poorly documented and misapplied. Therefore, we will present our point of view on the issue in question, as it appeared from our scientific approach. The issue in question involves large categories of issues : WHAT ?, HOW MUCH ?, HOW ?, WHY ?, FOR WHAT ?, WHERE FROM ?, WHERE TO ? (measurements), relative to the choice of individualized specific tests, rules, and control parameters !

We also present the connected issues related to each test from the point of view of labor protection, specific biomechanics (correct execution of the body movement in order not to damage it and to protect it, this way developing physical training), sports medicine and lack of student mobility and motricity. We consider that all repetitions should be performed with our own body without any additional inconvenience (the calistenic repetition of exercises) in the "power training" mode of force - speed - resistance - skill at maximum values because this is what the current practice in Self Defense requires.

For example, in the study of literature I could not draw conclusions regarding the motivational execution of a certain tests or of the parameters of execution of the specific control rules. What is the reason for the scientific choice of test \mathbf{T} ?, which is the reason for choosing the minimum and maximum execution rule (why does the minimum control rule have \mathbf{r} repeats for a grade 5 and minimum \mathbf{R} repeats for 10 (maximum)? This issue is very important because we study Self Defense scientifically and we cannot include "randomly by the ear" any elements of general physical training in the specific training necessary for Self Defense.

Before determining a student to perform an exercise, the coach teacher must explain the motion applicative utility thereof so that the student can understand what he is doing and not to perform an abstract physical exercise mechanically. Many student / athletes / sportsmen in derived battle sports from Martial Arts perform "many, stupid and pointless" exercises without knowing the essential subtle details that lead to performance with mastership and accomplishment (relative to what is done, how much it is done, how it is done, why it is done and what is the form of the correct execution of the movement in question) that lead to mastership and perfection. As they say, they perform certain physical exercises "because that's what Sensei told us to do !"

Separation by gender (male and female), by categories of age of the tests and control rules on general and specific physical training is unproductive for physical Self Defense because physical aggressions are not customized by gender, age, etc., and moreover current students are heterogeneous in all respects. Of course, men excel in strength and women excel in suppleness but in the field of Self Defense it is necessary for both components to be present at the same time according to the phrase "When two become one !". It is out of the question for me to have separate and different control rules for women and men in the same exercise depending on their biological age, because the race is with yourself for self overtaking and in order to successfully defend yourself against physical aggression. Each individual performs physical exercises with their own body and obeys the same mental and physical requirements in the case of psychological and physical aggression because men and women are equally exposed to the same type of aggression irrespective of their age. Here is the individualization and personalization of the technical - tactical executions according to each and every individual.

I have conceived these specific tests and control rules so that students can find them useful in physical Self Defense but which can also can be performed with pleasure and ease by the students in their free time. The specificity of these control rules and tests emerges from their quick and easy applicability in the conditions of Self Defense. We need to train ourselves and develop those utilitarian applicative motor skills required in critical stress conditions as it occurs in Self Defense, and not just of general physical development without practical applicability (see the issue of "poorly cognitive" bodybuilders doing " force training" to lift weight as heavy as possible while in competitions only muscle shape and volume are appreciated !)

Results

Our study showed that for students enrolled in Self Defense classes, the following tests and control rules are required, which we present in correlation with : the motivation of their choice, the protection of their work, their biomechanics and the helping exercises for development, of medicine, as follows:

Test 1: Abdominals - "jackknife" exercise : performed on the back with the hands stretched out in the head extension and / or hanging from the trellis. The individual capacity and quality of the abdominal belts in cases of physical conflict is measured in the training room through the physical shape of the abdominal belt muscles (how quickly they bring, and if it is possible to bring, the base of the feet to the palms), which is given by the capacity of rapid contraction of white muscle cells that show specialization in the fast execution of the muscle contraction. In the variant of the "jackknife" sitting on the back, with the hands stretched in the head extension, the biomechanical problem of lifting the legs simultaneously with the arms and the trunk will be taken into account, its return being controlled but quickly without throwing the hands and feet on the ground, as well as that of work protection that requires that the legs and hands be permanently stretched to avoid hitting the head with one's own knees and to increase the amplitude of the movement.

As the standard dorsal execution of the abdominal exercise - "jackknife", we note that during rest, the legs, body, shoulders, and arms are on the ground to rest, and as the modified version for sports performance, the

body of the subject rests on the ground only on the gluteal muscles though the body is stretched horizontally without any other contact with the soil.

From current practice it can be noticed that for most students this exercise, regardless of its form of work, is more difficult due to lack of muscular tonus of abdominal muscles correlated with the problem of the endocrine metabolic accumulation of adipose tissue, which will prevent them from performing the exercise.

In the performance variant of the "jackknife" exercise hanging from the trellis the medical problems of the joints will be primarily taken into consideration : the hand, scapular humerus and elbow joint that do not resist such a dynamic exercise regime (for various traumatological reasons). In this variant, raising the legs is more difficult and because fewer muscle groups are used compared to the first variant (lying down on the back with the hands in the head extension) and the muscular groups involved are used in an unnatural motor regimen.

As with the adapted kinesiology exercise, students can perform the lifting of the knee to the chest by hanging from a fixed bar / metal frame, but this exercise cannot be considered as a test for Self Defense because it uses mostly red muscle fibers with low contraction speed, their metabolism being aerobic.

We have presented here the exercise "jackknife" in the two basic variants used in all physical Martial Arts for current students (who are non mobile and sedentary in general) to be able to focus on the best option for them. Athletic performance students can perform both forms of exercise (lying down and hanging from the trellis) to see the difference between them. It is easy to notice that when fatigue occurs, the execution amplitude decreases and increases the resting time between repetitions consistent with the increase in respiratory volume required for psychophysical rehabilitation.

Traumatic orthopedic problems of the basin, spine and coxosacral pelvis area will also prevent students from performing the exercise.

Test 2: Squats with the arms raised parallel to the ground are required for testing capacity and motor quality of the lower limbs. We consider this test to be useful because in the physical struggle the need for repeated lowering and lifting of the body in correlation with specific fighting techniques often occurs. In addition, when we raise our own body, there is a need for lifting the opponent's body too. This exercise is performed by bending the legs keeping the spine perpendicular on the ground so as not to damage it. The lifting and positioning of the arms parallel to the ground throughout the exercise is done to put tension on the upper limbs and the harmonious development of the body. The initial starting position is with the feet of the parallel legs on the width of the shoulders, the base of the feet being well fixed to the ground throughout the exercise to have stability and not to damage the knee. The development of the foot and thigh muscles leads to the inability of the gluteal muscles to reach the ankles. In this case, the student will only perform semi squats as much as the body allows, but also in power training regime for developing strength, speed, and resistance (of reaction, execution, repetition). The variation of the sole heel alternate support is excluded from a correct execution. Endocrine metabolic (fat - accumulation of adipose tissue) and traumatic orthopedic problems in the ankle, knee and basin area and pelvic belt will prevent students from performing the exercise.

Test 3: Push-ups: There are several types of push ups and we bring here the issue of their choice in terms of utility regarding multilateral training for physical combat. In general, in all physical Martial Arts it is recommended to perform push ups in the punches to strengthen the surface impact of the punch and the related joint of the hand so intensely stressed in fighting, although in the Chinese Martial Arts there is the saying " hitting someone with the fist is proof of compassion". Thus, we have chosen as types of push-up executions:

3.1. push ups with shoulder width parallel arms (useful for working biceps and triceps antagonists with applications in linear punching techniques);

3.2. push ups with distant arms (in pronation) at two shoulder widths useful for engaging the chest muscles with applications in combats in the type of pushing and / or traction techniques on the opponent. Just theoretically, this exercise is the same as pushing the weight from the chest lying on the back on the gym bench. In practice, besides the factor of reversing sense of force application by sliding vectors, there is also the psychological problem of the specific execution for obtaining proper motor skills.

3.3. push ups in one fist useful for the development of the muscles of the arm, forearm and shoulder with applications in the repeated execution of the techniques of striking with the arm, the fist, the elbow and the shoulder.

3.4. wave push ups with palm support (circular forward and / or back). We have chosen this type of push ups for the simultaneous development of the muscles of the chest, shoulders, arms and forearms in conjunction with the simultaneous development of osteoarticular mobility, elasticity and flexibility in the hip joint. Since this kind of physical exercise is recommended as a kinetic therapeutic method of recovery and post traumatic recovery some specialists do not fit them into the category of push ups, but are of utmost importance in the practice of physical Martial Arts. Push ups in waves with palm support presents the great advantage of control intermediary positions specific to biomechanics through Yoga poses (Asana) where the subject relaxes, breathes and rests for a short while. This type of push up is executed with palm restraint and legs disengaged as much as possible (at least 90 degrees) for strength development, dynamic stability (more stability for to fight self vibrations induced to the body) and active stretching. We recommend the practice of Yoga poses (Asana) only for critical physical therapy cases because in Yoga the emphasis is only on the development of stretching, static effort muscle, in special breathing regime, without an immediate application in the fight.

The biomechanical problem of the wave push up exercises (with palm resting) implies that in the forearm flexion on the arm the body and chest reach as far below against the ground as possible, but without touching it, correlated with the linear and horizontal intermediate position of the body "like a plank" parallel to the ground and finishing with the posture support in the palms and foot base with the basin as high as possible. Practice proves that these goals are often merely theoretically ones even for advanced athletes.

Martial arts masters have highlighted three types of breathing during push ups (the initial starting position - bottom or top not important being emphasized on breathing correlated with body movement in space rather than on the movement itself):

r.1. expiration upon lowering and inspiration upon lifting (to develop traction force) is executed in the absence of the metal frame for traction at the fixed bar,

r.2. inspiration upon lowering and expiration upon lifting (to develop pushing force),

r.3. without breathing with the chest blocked, maximal effort and over maximal effort to develop anaerobic endurance during the fight.

We deem it useful for all these three forms of respiration on push ups to be tested and performed by the students.

The medical problem that prevents the individual from performing the push up is based on the trauma of the skeleton at the level of the osteoarticular system (from ankles, knees, hips, spine, to shoulders and elbows, etc.). A special "medical" type of repeated push ups is that of repetitions from the knee, but the body must always be in a straight line to the horizontal without inflections. This is useful for developing motor capacity in subjects under and / or poorly developed and / or as a kinetic therapeutic method of post traumatic recovery rebuilding. This practice of push ups on the knees should not be generalized and implemented because in physical confrontation it can generate failure.

Test 4: Two handed fixed bar pull up. These types of exercises are required to develop the strength of the arms, forearms, shoulders, and hands when it comes to the process of executing a fighting technique. There are two different types of fixed bar pull ups to be implemented equally with students: two handed fixed bar pull up both hands being in pronation and two handed to the fixed bar both hands are in supination. The difference between them is primarily the activation of other muscle groups in the execution of the mechanical work.

We draw attention to:

- Medical issues related to injuries at the level of the hands, arms, forearms, shoulders and elbows which lead to the impossibility of performing pull ups;

- Biomechanical problems when executing pull ups with low amplitude (initial starting position in which the arms are not fully stretched in the extension of the body, and the final position when the arms are not or completely flexed on the forearm) is defective, involving fewer muscle groups and other muscle groups not important. If the student cannot complete a full race, he / she must be assisted by a fellow being held and lifted by the leg during the traction. The "therapeutic" execution of traction at the pull down / pull up machine is not recommended, because in this case the all body stays in static place and only the upper limbs move inefficiently, the lower part of the body being relaxed.

- Problems of work safety when balancing pull up is made results in facial trauma following contact with the support bar, upon engagement of insignificant muscle groups, and injury to upper limb joints.

Test 5: The trunk lifting with extensions are made with the hands to the nape. This exercise are useful for body training in face-to-face confrontations and ground confrontations (for example, the Ne Waza technique in Ju Jitsu). We have identified four useful types of trunk lifting with extension exercises : in front, to the left, to the right and to the back. All these exercises are performed with the hands on the nape to facilitate breathing (diaphragm dilatation), but also to get the student used to release the hand from the aggressor's grasp. Once your body is lifted by muscle contraction, deep double expiration takes place, and once your body is download deep double inspiration will be made. For the execution of the trunk liftings we recommend the help of a training partner who stands on knees (above our tightly glued legs) in the position of Seiza. Martial Arts Masters use the training partner also to practice a light and fast percussion with fist on the muscles that is aimed at being trained for a rapid contraction.

We draw attention to the biomechanical problems of deceive the lateral trunk extensions when using the balance of the 1 st. degree lever of the two combined bodies (of the performer of the exercise and of the assistant partner) for lifting on one side without performing muscle contraction.

As well as the medical problem, we anticipate the accumulation of adipose tissue that does not allow free movement of the body and the trauma of the pelvis / hip and backbones.

Test 6: adapted throw of the round ball. We include this test of control of motor quality and motric capacity of the special physical prepare by coordinative motion quality control of physical training. Practice of Self Defense from physical Martial Arts also involves throwing various objects (more or less contusive) to the aggressor with the purpose of defending and gaining time. Here we encounter the problem of biomechanical adaptation of the throwing the round ball for the purpose of Defense and Self Defense. Thus, in contrast to the school practice (where there is only one type of throw with one crafty hand, on the spot, by rotation and with the ball starting next to the shoulder, in static way, in free space, in the right line) in all physical Martial Arts we have the "Adapted Throwing of the Round Ball" based on:

- throwing with one hand (left and / or right crafty or clumsy) and / or two hands;
- throwing on the spot and / or movement (linear running and / or circular rotation);
- throwing on a linear trajectory or a circular trajectory to avoid a fixed and / or mobile obstacle;
- throwing with or without jumping;
- throwing at the moving target and / or fixed imaginary point as far as possible.

All these types of throws are made and used in physical Martial Arts without special attention to our initial standard position. Thus, we are interested in the precision of throwing on a fixed or mobile point and the length of the throw, regardless of the personal style of execution. This problem involves similarities with the military practice of grenade throwing and documented by artillery shooting. This problems are systematizing by theoretical mechanics, when, to have the maximum firing stroke the elevation angle (angle in vertical plane which is governed by the distance to the target and the energy of the propelling charge) must be 45 degrees and in order to have precision in hitting the target we must move identically, as the target against the same inertial frame of reference, or anticipate the movement of the position vector of the target in time and space. See the details in the applied physics in inertial frame of reference on Newton classical mechanics.

Test 7: Speed running 400 m sprint with standing start. This test is essential in Self Defense physical training because 400 m running is the Olympic athletics test (indicating the performance of time covering the indicated area in) but above all, it is the minimum distance to run in order to be relatively safe in the case of a street conflict (see for example altercations in social protests). The standing start is essential because there is no possibility in terms of fighting for the use of block start, and hence the increased runtime of the speed running. We cannot take as a point of reference the value recorded in sports competitions (https://en.wikipedia.org/wiki/400 metres) because we have a heterogeneous population group that is not prepared (by all point of view) to do physical performance. The current time achieved by athletics champions is around 43 sec / 400 m, which implies an approximate velocity of 0.1075 m / s equivalent to about 33.4 km / h but in a supra maximal effort of very short duration. The running is uniformly accelerated in space without obstacles and approximately linear. In practice, there are issues of unpleasant surprises, motor incapacity,

injuries, psychological issues of perceptions and sensations, specific stress problems, inadequate clothing and footwear issues, obstacles in the social environment, problems with carrying luggage, etc. This results in great discrepancies even between the time taken by the individual in a sports test (in sport arena of university) and the time spent in an urban conflict. We specify that the average walking speed of a man is about 5 km / h (about 1.3 m / s), it travels 400 m in about 307 sec. ≈ 5.12 min. Under stress conditions, physical and psychological incapacity, a running time of 400 m runs between the speed of 10 km / h (about 2,7 m / s) and 15 km / h (about 4,1 m / s) is a good time. This makes the approximate speed of 400 meters covered between 2,4 minutes and 1,6 minutes, time much lower for aggressors to gather and get organized.

Test 8: Cooper test: Long distance running in 12 minute – Aerobic resistance test running is designed for testing main volume of O_2 in blood. As the reference frame we include Cooper's on line test and web sites (https://en.wikipedia.org/wiki/Cooper test, https://ro.wikipedia.org/wiki/Testul Cooper, such as https://www.brianmac.co.uk/gentest.htm (with on-line calculator), to figure out the level of physical training and adaptation to the individual's effort, but above all about the individual's ability to reach the maximum security area by the need to travel a distance as long as possible in the shortest possible time. Site 3 also offers an on line computer to check psycho physical and biophysical performance for athletes, but we again raise the issue of student heterogeneity and the specific Self Defense issues discussed above. For instance, from the study of the Bucharest city map we can see that the distance between the Universității Square and the Victoria Square (two locations with tradition in violent social protests) is about 3.4 km, far superior to that covered by an good sportsman in the Cooper test, who covers approximately $2 \text{ km} \pm 25 \text{ \%}$ m. We consider that distance cover by Cooper test is quite large and offer personal safety. Being so far away from the conflict zone, safety and personal security are guaranteed, but "first these few kilometers should be covered as fast as possible." Considerations that impede motor psychic performance are the same as those from the 400 m sprint test. We consider the average speed of endurance running in the case of a street conflict to avoid a violent physical conflict is also, the identical as 400 m speed running, between 10 km / h and 15 km / h even for trained individuals. With 10 km / h in 12 minute cover 2 km and with 15 km / h in 12 minute cover 3 km. In both case you are in safe distance against violent people in social protest sites, but you must be check if a violent persons does not follow you.

Test 9: long jump in running (with landing on one's feet). We chose this test in correlation with the previous tests because in Self Defense during violent conflicts in the street, it is necessary to carry out jump over various mobile and / or immobile obstacles in the environment.

These Self Defense long jumps in running have the following features:

- they must be performed mainly in length (but maximum 4 - 5 m measured from the place where the foot was execute separation to the ground) with a negligible height of less than 1 meter to avoid unfavorable environmental elements (pits, holes, stones, ponds, etc.). We remembering that for maximum jump distance elevation angle must be 45 degree.

- landing must be done on one's feet due to instability of unfavorable ground and of related physical aggression. To avoid trauma and failure, a landing on the back is excluded as it happens in athletics when jumping is performed at the sand pit.

A long jump in running over 7 to 8 meters as happens in Olympic games is excluded due to the peculiarities of the situation of coercive social events. The considerations that undermine the motor psychic performance are identical to those from the running tests.

Test 10: triple jump in running [with landing on one's feet]. Ends the tests drawn from the running school present in athletics, being complementary to test 9 long jump in running (with landing on one's feet). Triple jump is useful in Self Defense when encountering multiple obstacles in the environment. The theoretical and practical considerations of execution are identical with those of long jump in running (landing on one's feet). We think the performance of 10 m jumped from running by triple jump (the length of the jump is measured from the first beat for the first bounce) is a notable achievement for current students.

Test 11: osteoarticularocoxofemoral mobility. Finds its usefulness in our research to measure somatic development and motor performance of performing techniques of hitting with the lower limb and also vital capacity of effort. In current practice, the individual does not have adequate time for heating and stretching but the motric capacity (in our case the motric capacity from fight who is different from fighting power) is directly

influenced by the osteoarticularocoxofemoral. So we have to develop and measure students participating in Self Defense classes and the evolution of the distance from the ground to the pool joint when executing the string on the left side, the string on the right and the splits. As an important element of specific biomechanics, we present here the conditions for the hands to be in the air parallel to the ground (for equilibrium) so that they cannot support the body and the feet are straight without the knees bent. Here we have two different measurements can be done about the distance from the ground: the distance where the ache occurs in the joint and in the muscles and the distance where the pain is intense and unbearable. Here again occurs a new problem about how we normalize ache and intense pain because each individual has different thresholds of psycho physical sensations. For medical reasons, we do not recommend going beyond the distance where the ache occurs. These metric values are influenced by the biochemistry of the endocrine system specific to each individual. Osteoarticularocoxofemoral mobility has higher values among women due to the particularities of their endocrine system. Due to the specificity of our problem it is difficult to impose a minimum threshold and a maximum threshold of the distance between the hip and the ground when performing osteoarticularocoxofemoral mobility in Self Defense. However, each student must be aware of the issue of osteoarticularocoxofemoral mobility and develop it continuously. The problem of injuries to the locomotive system can lead to the impossibility of testing osteoarticularocoxofemoral mobility.

Test 12: relay race with the shuttle (repetitive tests). 10 repetitions x 10 meters with various and diverse utilitarian applicative exercises. It has been extracted from the chapter of motion games that is always present in school curriculum. We consider this exercise to be useful in developing at the same time strength, speed, endurance, skill - coordination in all of their forms of manifestations (reaction speed, repetition speed, isometric force, effort capacity, spatial-temporal coordination, etc.) in various and diverse circumstances described by the self-defense issue. At the end of the 10 meter distance to be covered by various movements, the student will perform various combat techniques (without repeating the battle technique in a shadow box system), gripping and touching various objects to develop both cognitive and motor skills. Here comes a paradox : injuries and dysfunctions diminish during the execution of these repeated exercises in motion games. Coach teacher must individualize (with wisdom) for each student the motric tracks so that each student can maximize his motor and psychological development.

Test 13: Burpee (**squat thrust**) exercise also referred to in slang language as "Korean push ups" is the one that crowns these tests and Self Defense specific control rules proposed by us. The Burpee exercise has the great advantage that it is very close to the real dynamic physical and mental dynamics in the fight (multiple and intense mixed effort in maximum and super maximum parameters stretched over a long period of time). It will record the number of repetitions and the time interval in which they were unfolded. Exercise can be done in the basic version for beginners and / or in the extended version with the execution of a push up with support in both hands, the entry into a squatting position followed by a explosive bounce, in X form, as high as possible vertically with arms and hands as far as possible from the body. This variant is more physically demanding and not suitable for everybody. The most demanding area of the body is of course the lumbar area which leads to intense pains and stopping repetitions. Overweight people will therefore have more forbiddance to perform this exercise.

We draw attention to the issue of biomechanics (the knees should not be on the ground, the complete execution with maximum amplitude of the movements), as well as medical and labor protection issues (any kind of medical problem, orthopedic traumatic, prevents the execution of the exercise due to the maximum and over the maximum intensity of the execution!).

In the second part of the paper we will discuss how we choose the parameters we measure and how we measure them within student tests and rules of control. Anthropometric and anthropological parameters specific to a human biotype specific to yielding in Self Defense are considered to be part of another scientific study. Due to the multitude of forms of manifestation of these vector valued parameters, we are referring to them altogether and not individually per each and every test. It easy to record the number of repetitions and the time interval in which they were unfolded, but this is "basic ground zero".

Thus, we should measure and collect various and multiple vector valued data, taking into account factors such as speed(s), distance(s), amplitude of the angle(s), time(s) (time of execution, time of resting between two repetition, time of reaction, time to recovery, etc.), frequency, minimum and / or maximum number of repetitions, the weight of body biomass before and after effort, biochemistry specific to ergophisiology (respiratory volume, variation volume (max. and/or min.) of O_2 , variation volume (max. and/or min.) of CO_2 , breathed, lactate, uric acid, phosphocreatine, carbohydrates, etc.), pulse, tension, respiration rate, consumption of resources in effort (for performance) and post effort (for rapid recovery), variation in body temperature and human bioelectricity, pressure exerted on the ground, variation in time and space of the center of bodily weight, psychological comfort, rate of recovery as fast as possible after effort, etc., in all their forms of manifestation because "psycho physical performance ranks between pathology and morbidity" and "there is no major difference between the top training of athletes, cosmonauts, aviators and special forces troops." All these vector valued parameters must be individualized for each and every student in order to overcome them and to break the personal record in optimal health conditions.

Unfortunately, practice shows that these scientific considerations of utmost scientific importance regarding the assistance and recording of psycho physical tests by specific tests and control rules remain only on paper and can't be applied in practice from multiple complex and related causes.

Upon written recording in the statistics of the student's psychic motor performance, the training teacher should consider measurement errors but also remove the student's deception factor when he/she reports a higher value for a high score. The issue of organizing the student class also occurs. In the research institutes in the sports field / the human psycho motric field we encounter a subject that is being tested and at least 3 researchers performing various physical activities (monitoring recording devices, individualized assistance on the subject to be tested, etc.). Arithmetic tells us that a minimum of 90 researchers are required to measure objectively and rapidly the ongoing events in a class of 30 subjects. We explain this issue of lack of qualified staff for psychic motoring testing by pointing out again that there is no difference between training athletes, cosmonauts, hunting pilots and special military forces. These socio professional categories benefit from a full team of specialists who are committed to accurate measurements according to standardized working procedures of the various parameters deemed as important in the construction and design of the scientific experiment. Current classes of students practicing Self Defense and combat disciplines extract from physics Martial Arts are made up of about 100 students. In the school and university practice, the trainer teacher is the sole responsible for all these issues that go beyond him and thus the errors in the subjects' tests occur.

Conclusions and recommendations

In the physical training aimed at Self Defense, we need to find those specific tests that help develop the motor skills and abilities relative to the utilitarian applicative techniques. See, for example, the issue of long jumps in running when it is not carried out at the sand pit and the landing has to be done by standing up so that we can move quickly, so their implementation is based on the constraints of the actual confrontation.

A special issue regarding the real value of physical training of students in Self Defense classes is the performance of tests and measurements in ideal conditions (gym, athletic field, etc.), the measurement being made by a single teacher involving many errors. In addition, these data are poorly correlated with current practice where there are numerous unforeseen issues preventing the development of a proper psycho physical performance (adverse weather conditions, medical issues, multiple assaults coming from the environment, poor sensations and perceptions on the environment, psycho social pressure, uncomfortable clothing and large luggage, etc.).

The control rule of a test (the number of maximum repetitions performed in exercise X) involves the following issues: The current student being poorly trained both mentally and physically (even displays pathologies of non motricity and psycho motricity), we take as initial starting point 0 (ZERO) repetitions (for many and various reasons) and we are following individual progress. This maximum number of repetitions must also take into account resource consumption (maximum yield with minimal effort), post effort recovery rebuilding time, etc., but also the psychological comfort of the performer.

We recommend practicing tests where the maximum number of repetitions are measured under the guidance of a teacher trainer giving verbal command (one - break to repeat, two – break to repeat,) to facilitate the development of the psycho physical development by imposing a time and tempo of reaction to stimuli received from the environment, but also to boost student to go beyond the personal psychological threshold of individual performance. The student will stop repeating where his maximum effort limit is (and will remember the number of repetitions), and the trainer teacher will continue to count until the entire class has exhausted the current motor psychic potential. Only repetitions that are correct from all points of view will be accounted for and not just any kind of "pseudo reps". Thus, although it is desired to achieve the highest performance, only those biomechanical correct executions and not all "pseudo repeats" will be taken into consideration. The issue of correct breathing (prolonged double expiration on muscle contraction) should be included in the assessment of correct execution in order not to develop additional pathologies.

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