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Laboratory Evaluations with Adolescents with Down Syndrome Science, Affectivity and Playfulness

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Keywords: down syndrome; laboratory evaluations; physical education; affectivity; playfulness; emotions.

I. Initial Considerations

Caminante, no hay camino:
the path if you walk.
Antonio Machado

Down Syndrome (DS) is a chromosomal abnormality on chromosome 21 that affects the entire body system, affecting about 1 in every 1000 newborns worldwide (FBASD, 2019). Despite the high incidence of cases, little is known about the genetic characteristics due to the chromosomal alterations of this population (Mégarbané et al., 2009). However, the literature highlights some changes, such as generalized physiological dysfunction, neuropathogenesis, growth disorders, alteration of mitochondrial function (Roizen & Patterson, 2003), premature aging, ligament laxity, and muscle hypotonia (Foley & Killeen, 2019; Zigman, 2013), heart problems (Tsou et al., 2020; Capone et al., 2020)

Ranweiler (2009) points out that muscle hypotonia is observed in approximately 80% of newborns with DS, in addition to having joint hyper flexibility, short stature, and pelvic dysplasia with a narrow acetabular angle. As a consequence, this results in delayed psychomotor and neurological development (Capone et al., 2001) and reduced muscle strength (Foley & Killeen, 2019; Cioni et al., 1994).

Despite presenting this clinical picture, individuals with DS increased their life expectancy from the 1970s onwards, and today they reach over 60 years of age (Capone et al., 2020; Tsou et al., 2020; Covelli, Raggi, Meucci, Paganelli & Leonardi, 2016). This exponential increase in life expectancy occurred due to the recognition of specifics, better conditions regarding medical care, social assistance, and increased survival (Presson et al., 2013). However, this population has shown accelerated biological aging, increasing Alzheimer's disease. (Bull, 2020; Zigman, 2013), sleep problems, social inadequacy, regressive behavior, depression, anxiety disorders, loss of self-care skills (Covelli, Raggi, Meucci, Paganelli & Leonardi, 2016), loss of muscle strength, low work capacity, chronotropic incompetence, changes in autonomic function, contributing to overall morbidity and mortality (Fernhall, Mendonca & Baynard, 2013).

Such problems could be alleviated by the insertion of regular programs in Physical Education. However, the population with DS has shown a lower level of physical activity compared to their peers without DS, which may accentuate the process of loss of muscle mass and strength in this population (Cowley, Ploutz-Snyder, Baynard & Heffernan, 2010; Ruiz-González, Lucena-Antón, Salazar, Martín-Valero, & Moral-Munoz, 2019).

Studies have reported that adolescents with DS exhibit less muscle strength in the lower limbs, knee extensors, and hip abductors compared to the control group (Mercer & Lewis, 2001; Cioni et al., 1994). Cioni et

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al. (1994) further concluded that adolescents with DS generally do not show improvements in strength beyond 14 years of age. Curiously, Pitetti, Baynard e Agiovlasitis (2013) emphasize that weakness and muscle strength in the lower limbs can be a limiting factor in daily life and aerobic capacity in people with DS. In addition, the loss of muscle strength can directly influence functional performance and autonomy (Volaklis, Halle & Meisinger, 2015).

Thus, to attenuate the loss of muscle strength, it is necessary to carry out assessments to analyze muscle functional capacity to prescribe physical exercises in a safe and individualized way. However, Physical Education teachers may face some difficulties when evaluating the population with DS, requiring prior experience and in-depth knowledge of the characteristics of this group.

It is also considered that DS is the most frequent cause of intellectual disability (Fisher, 2020; Capone, 2020; Vitale et al., 2019), and this deficiency can lead to difficulties in understanding and performing the tests to be presented and to changes in mood towards the professionals involved in the research and the equipment and materials needed for the tests.

These variations in mood can also imply variations in the tonic state and prevent the proper performance of the tests, in addition to the fact that issues related to the affective relationship with the evaluator can create an excessively playful or agitated environment. Another factor is the intimacy with the environment where the evaluation is carried out (or lack thereof), the clothing of the people present in the laboratory, among other aspects that will be analyzed in this work, which can make it challenging to carry out the tests correctly and compromise the reliability of the results of the tests.

It is also worth considering that many physicians, Physical Education teachers, and other professionals involved with laboratory work are not familiar with the behavior of the population with DS, which differs from those of the general population. Thus, it is believed that psychosocial and affective-emotional issues should be considered during laboratory evaluations to avoid erroneous data and diagnoses (Tsou et al., 2020).

In this sense, the objective of this study was to report approach procedures for carrying out data collection in a laboratory environment developed in research on muscle strength, body composition, and hemodynamics in adolescents with Down syndrome.

II. Methodological Paths

The present work is an experience report of a descriptive nature carried out during data collection for research on muscle strength, body composition, and hemodynamics in adolescents with DS. Such collection was carried out in a Physical Fitness and Health laboratory of a private university in the Federal District (Brazil) and approved by the Ethics Committee in Research with Human Beings under protocol nº 2.419.917/2017 related to research with laboratory collection.

Therefore, we present below the materials and methods used to carry out the data collection of the study, and then, we will discuss the procedures developed so that such collection becomes possible and could present reliable results. It is essential to clarify that the development of the methods was due to the non-compliance of the participants with the guidelines preceding the data collection. It was necessary to develop guiding strategies and procedures for data collection to be successful.

a) Materials and Methods for Data Collection

Participated in this data collection 11 adolescents with DS aged between 11 and 17 years and ten adolescents without DS, in the same age group, totaling 21 participants. The 11 participants with DS had Moderate Intellectual Disability, confirmed by a descriptive medical report. In addition, they were part of an extension and research project in specialized educational services in Physical Education and Art at a private University in Brasília, carried out in partnership with the State Department of Education of the Federal District (Brazil).

Although ten adolescents without DS participated in the research within a control group, such participation will not be the focus of this study, which aims to present and analyze only the approach procedures submitted to the adolescents with DS.

The data collection was carried out in the Physical Fitness and Health Laboratory under the supervision of the researcher, a Physical Education teacher and a cardiologist, and a team of technicians who worked in the laboratory.

To carry out the research, the data collection had three phases: assessment of body composition and exercise tests; familiarization with the maximal isometric voluntary contraction test (MVC); and completion of the MVC test.

For anthropometric variables, total body mass was collected and measured on a Filizola® electronic scale (São Paulo, Brazil) with a precision of 0.1 kg; height was measured using a portable stadiometer (SECA® 214, IL, USA) with an accuracy of 0.1 cm; circumferences were measured using a Sanny® tape (Santo André, Brazil). The Lange brand adipometer was also used. Ò (Skinfold Caliper, CA, USA) to collect triceps and subscapular skinfolds, and then the percentage of fat (%F) was determined, as proposed by Nascimento et al. (2016). To assess fat and lean mass, DXA (DTX IQ LUNAR®, IL, USA) was used according to the manufacturer's instructions.

The exercise test was performed on a treadmill (Super ATL, Imbramed, Brazil) coupled to the electrocardiogram during the test on an automatic electrocardiograph (Cortex Biophysik, Metalyzer 3B, Germany), following the ramp-type protocol as established by Myers et al. (1991).

As for the hemodynamic variables, they were performed according to the British Association of Cardiology (Topouchian, El Assaad, Orobinskaia, El Feghali & Asmar, 2005) in the electronic device of the brand Microlife® (BP 3AC1-1, Switzerland). Blood pressure was monitored, at rest, during the test interval and post-test, at 1, 5, and 10 minutes of MVC.

Finally, the CVIM test was performed using a Jamar® handgrip dynamometer (Sammons Preston, Illinois, USA) to determine the isometric strength of the upper limbs. However, to assess the MVIC of the lower limbs, a CEFISE brand Power Din Pro® dynamometer (Campinas, Brazil) was used, so the load cell was attached to a Leg Press 45° (LP45o) device.(Righetto®, Campinas, Brazil), following the manufacturer's recommendations. The protocol for evaluating the IVC for both upper and lower limbs was 5 seconds of maximum isometric strength, with 3-minute intervals for recovery of energy substrates and normalization of cardiovascular parameters.

III. Experience Report

The instruments and tests used to carry out the research are listed above. However, all instructions provided by instrument manufacturers and the methodologies proposed by scientific research in Physical Education are aimed at people who do not have physical or intellectual disabilities.

During the evaluations, it was found that the participants with DS did not present results compatible with those expected for the tests. The main reasons were linked to their physical conditions because of problems such as generalized ligament laxity, hypotonia, and lack of balance, issues directly related to the DS that needed differentiated attention concerning the intensity of the proposed activities as with the rest intervals.

However, the most worrying issues in the case of research participants with DS were related to Intellectual Disability since difficulty was observed in understanding the guidelines for carrying out the assessments. In addition, there was a lack of control of emotions caused by the estrangement regarding the laboratory space, which resembles a hospital environment, and that can refer to bad memories regarding the medical treatments received by the individual (some of them had already undergone heart surgery). This estrangement was aggravated by the clothing of the professionals involved with the research since the use of a white coat was mandatory in the laboratory, which, to a greater or lesser extent, can refer to behaviors similar to those related to the white coat syndrome.

The White Coat Syndrome has its causes related to the association of the doctor or health professional with the hospital environment, needles, illness, and death. Such association can create an aversion to health professionals and the clinical setting.

There was a manifestation of fear and estrangement with the equipment used to carry out the tests and evaluations and adverse reactions, even considering that no instrument or method that was invasive or that caused pain was used.

Another problem was the approximation of study participants with the researcher and other professionals involved. Both in cases where there was and in those where there was no intimacy, emotional reactions from the individuals were perceived to hinder the tests' performance. When intimate, the adolescents played excessively, and when they did not know the researcher or someone on the team, they closed themselves off. In both cases, understanding and carrying out the tests were compromised.

Based on these considerations, and given the failure presented to the performance of the tests and their results, and because of the possibility of not obtaining reliable data for the study's conclusion. We sought to develop approach procedures that considered the most varied nuances of the research participants' emotional behavior and their neurophysiological and psychosocial conditions.

IV. Theoretical Contributions

Considering that the difficulties presented during the tests were linked to the participants' emotions, the theory of sentiments of Henri Wallon (1971, 1975, 2005), for whom they (feelings) essentially consist of systems of attitudes that, for each one, correspond to a certain kind of situation (WALLON, 2005, p. 134). Thus, attitudes and situations will mutually imply each other so that there is adequacy in the individual's responses to the effects of the environment.

For Wallon (1975, p. 119), emotions consist of what unites the individual to social life, so there may be the most fundamental element in their biological existence, being initially, especially in the first year of the child's life, a means of communication with others. Although the organic reactions of emotion tend to fade as the image of situations or things becomes intellectualized, this connection will not suffer ruptures.

To explain the role of emotions in human activity, Wallon (1971, p. 150) discusses muscle tone, giving it a primordial function in the individual's relationship with the environment and its development. Thus, in addition to the process of motility and support and support of body postures, there is the tonic

function, which is the emotional substrate of the posture tonus.

Inside your theory, Wallon (1971, p. 150) describes three categories of action of the tonic function on the motility function: eutonia, hypotonia, and hypertonia. It is essential to point out that the hypotonia presented here is a circumstantial condition that interferes with the motility function according to the individual's emotional state. Therefore, it differs from the hypotonia shown in Down syndrome, which is constant and pathological.

These three conditions are how the tonic function interferes with the motility function, and they happen to represent the emotions experienced by the individual. Thus, a tonic alteration is a form of flow and presentation of emotions and feelings.

For Wallon (1971, p. 150), there are hypertonic emotions, which are those that raise the tone to the muscle's ability to drain them (fear, anger, etc.); hypotonic emotions, which reduce the tone below the muscle's need to act in certain situations (shyness, fright, depression, etc.); and eutonia, which is the state of tonic balance that allows fluidity of movements.

Within the theory of Wallon (1971, p. 111), it is emphasized that it is not possible to remain indifferent in the face of the presence of others or of environments (especially those unknown or not yet experienced). Thus, momentary impressions or desires will interfere with the psychic dispositions of individuals, especially those who do not yet have an intellectual development that gives them an adequate understanding of the situations, whether due to age or a particular disability, as is the case of the individuals who participated in this study (the entire sample had a moderate intellectual disability).

In conclusion, it appears in the theory of Wallon (Martinet, 1981, p. 57) that emotion, regardless of what it is, causes a variation in the tone and the organic life, leading the body to focus on its sensitivity, failing to act accordingly on the surrounding space, because the cognitive means, while the emotion lasts, lose their ability to act.

The experience of emotion can lead to its understanding and overcoming and the individual's intellectual development. However, in the case of intellectual disability, such knowledge and overcoming may take time, leading to more or less unbalanced reactions that compromise specific experiences. Thus, Strategies were sought to reduce the interference of emotion during data collection and to keep individuals close to a state of eutonia for better understanding and to carry out the tests.

a) Paths Traveled

Second Wallon (1971, p. 79), the most acceptable way to reduce the organic manifestations of emotion is to oppose it to perceptual or intellectual activity. Therefore, the first step to meet the needs of individuals with DS was to bring the researcher closer to their families.

An initial conversation with family members, seeking information about routine, tastes, desires, activities performed, fears, color preferences, flavors, music, movies, and leisure activities, is an anamnesis of the individual's daily life.

This closeness to the family facilitated direct communication with the individual with DS since the researcher, from then on, began to consider relevant aspects of her daily life to establish a good affective relationship so as not to compromise the performance of the tests, mainly respecting the rhythm of each research participant and his ability to understand, presenting aspects he has already experienced and that please him.

This procedure sought the possibility of a state of eutony and trust so that the researcher could present the research equipment, materials, and spaces. In this perspective, seeking greater familiarity with such space, she no longer wore the white coat to avoid the research participants' strangeness, asking the other laboratory collaborators to do the same.

The second step was familiarizing individuals with DS with the laboratory space. Visits and conversations were carried out in the laboratory, where the research participants were received in a playful and affectioned way for recognition and not to feel inside an inhospitable environment. The entire process, from the beginning, was accompanied by a family member of each teenager, asking them for help whenever necessary.

From these steps, the tests for data collection began. However, there was another concern. Considering Henri's theory Wallon, an affective and playful environment would be necessary so that there would be no interference of emotions in the process. The environment and the professionals were already known. However, it was necessary to pay attention to the fact that the excess of playfulness could lead to changes in the tone that would disfavor the performance of the tests. Both because the participant could think that it was just games and not performing the activities correctly, as well as considering himself within such an affective environment, that he could guide his actions according to his desires and also fail to carry out the proposed activities.

It was then necessary for the researcher to constantly observe each research participant's tonic and postural alterations and their behavior concerning the proposals. The tonic and postural states were observed to verify if the individual was in the eutonic condition, seeking to avoid excess euphoria or affection.

Upon realizing that the test had been performed inappropriately due to this tonic and postural state

inappropriate, the researcher waited a while and tried again until a correct execution could be observed.

Coercive reprimands were also avoided to seek the correct performance of the tests, as interventions of this type could alter the participant's tone and create discomfort to the point that he no longer wanted to participate in the study.

Moving on to the performance of each test, we begin by describing the procedures carried out in the anthropometric evaluation, when the researcher made the measurements first on herself, stepping on the scale and demonstrating how the participant should position themselves, as well as with the height measurement. To make situations playful, participants were asked to play a game where they should imitate a statue on the scale or the stadiometer so that the participant could not move their bodies when they were doing the height and weight assessments. The researcher also joked by comparing her measurements with the weight and height of the participants.

Then, the evaluation of the percentage of fat through the skinfolds. The first step adopted was the presentation of the equipment to the participants. As the adipometer is similar to a pair of pliers and its use is made by grasping skinfolds, which could frighten participants with DS, the researcher initially played with each one, holding folds on themselves and the fingers of the participants teenagers so that they would realize that the procedure was painless and non-invasive.

From there, playfully, skinfolds were measured on different body parts, always talking to the participants about their sensations. If it was hurting, tickling, if it felt good if they wanted to stop or continue.

The next step was assessing the isometric strength and between parentheses - (how a handgrip) of the upper and lower limbs. To perform the measurements on the lower limbs, a stadiometer was used, a device similar to a pair of pliers that must be pressed by hand for 5 seconds with the individual's maximum strength. For the lower limbs, the Leg Press was used, where the participant lies down and pushes a weight with the legs up, also remaining in this position for 5 seconds.

In these two tests, the researcher found the most difficulty in verifying these teenagers' correct execution. The person with DS has hypotonia and ligament laxity associated with tonic variations due to emotion, which can completely invalidate the test. Another problem can be the lack of understanding of the correct execution or the fact that the participant does not do what was asked, joking or finding it difficult. The question then arose: how to make the participant understand the test and perform it properly without getting dispersed or refusing to complete it?

First, the researcher asked the participants to squeeze her hand "very hard," playing with them and saying that they had much strength; at the end of this movement, she told them to perform the exact grip on the device with the same force as they squeezed her hand. Also, to stimulate them, she squeezed the device using little force and showed the participants that she was not very strong, asking them to do the movement afterward. When noticing that they had done it with more force than the researcher, they felt more confident and encouraged to carry out the text.

Faced with a student who was reluctant to take the handgrip test and did not understand it correctly, the researcher used the image of the child hero "Hulk," who, according to his mother, was his favorite character. Thus, making use of the symbolic game, the researcher said that the test had already been done by "Hulk" and that he was very strong and, based on this information, told the teenager that the trial would evaluate his strength, which was similar to the from "Huck." In this way, he understood the function of the test and was predisposed to do it.

As for the Leg Press test, used to verify the strength of the lower limbs, when performing it, there was always a technician holding the platform that was raised with the participant's legs so that he would not get hurt if he removed his foot from it due to of getting tired or not liking the test.

Games always preceded the performance of this test on the device, where the researcher and a laboratory technician performed the lightweight assessments themselves and encouraged the participants to do the same. They compared the results, always showing that the participants were stronger than they were and encouraging them to do it with maximum strength.

Extra care and procedures were also needed to perform the DXA test, where the participant lay down and was inserted into a tube to do a body scan. First, there must be an understanding of the need to stand still during the 30-minute assessment. There is also annoyance with the sound caused by the device.

Initially, the researcher provided the participants with the experience of lying down on the equipment and seeing the sensation it caused to enter the tube and remain still. Some adolescents commented, played, touched the walls, and asked to leave, among other behaviors that could not happen during the evaluation. In addition, participants were informed that DXA's job would be to take a picture of the inside of their body and that they should stand still and pose so that the picture would look good.

To make the activity playful, the researcher used the resource and asked them to play at turning into a statue during the test, in addition to talking to each participant during the entire time he was on the device in such a way that he felt like he was playing and not performing an assessment.

The experience of showing the test result to each participant was very relevant, informing them that it was a photo of their skeleton and making and encouraging comments about what was done and the outcome.

Regarding the measurement of blood pressure, the researcher, before placing the cuff on the adolescent's arm, reported that it was a belt that would tighten his arm a little, simulating holding the participant's arm with his hand. After that, she would place the cuff on her arm. The teenager inflated it so that he felt the pressure and could see that it didn't hurt or bother him. Only after these procedures was the measurement performed.

It should be emphasized that to measure blood pressure, the participant must be calm, without agitation or haste. Therefore, after the explanation, the researcher talked to each participant until she realized that there were favorable conditions for carrying out the test, and, during the trial, she placed her hand on the participant's hand, as it could close it, raising your blood pressure.

Regarding the test performed on the treadmill, it was essential to carry out recreational activities preliminarily, allowing each participant to get acquainted with the device through games where the treadmill's speed was changed, challenging it to overcome the various conditions presented. During the test, the researcher was always next to the participant, guiding and stimulating him by touching his back to warn him when to increase or decrease the speed of the steps.

When not aggressive, this simple touch on the back can mean a stimulus for the participant and, at the same time, an affectionate gesture, showing him the researcher's affection towards his participation in the proposed activities.

In the treadmill test, it is also necessary to be very attentive to verify that the participant is not exhausted and continues the movements due to the excitement caused by the stimuli of the researcher, family members, and technicians. It is also necessary to verify that the same is not neglecting the test by making little effort to receive the attention of observers. But once, it becomes essential to observe the tonic and postural alterations proposed by Wallon.

Finally, to carry out the cardiological evaluation through the electrocardiogram, problems were also found that could compromise the result and even the performance of the exams. The fact that the participant is lying down and shirtless can already be a distracting factor or leads to games on the part of the teenager or even a possibility of shyness, which can increase their heart rate and compromise their performance on the exam.

Another point that can distract the participant is the simple placement of the electrodes on their chest since this could be funny (some people pulled the electrodes to play with the researcher), uncomfortable, or even painful in some cases. Therefore, there was work to familiarize each participant with each part of the equipment with which he would have contact. The researcher patiently presented the electrodes, pears, wires, and cables and showed how they were connected before starting the exams. She also placed the electrodes and pear in her hand, on the participants' hands and chest, even taking them in front of a mirror so that they could observe the equipment, verifying that they were safe. It was started after realizing there was already the possibility of performing the exam properly.

Also, before cleaning the participant's chest with alcohol, the researcher passed the gel on her hand and the participant's hand, encouraging her to smell her hand, feel the temperature of the alcohol, and always play with these situations. Only after this, during the procedures, verifying that the participant was safe and familiar with the equipment, was the examination carried out, always considering the possible changes in the adolescent's mood, aiming to guarantee a good relationship with the procedures.

V. Perceptions about the Path Taken

All tests and evaluations applied in this study bring the guidelines and guidelines for use by their manufacturers, in addition to having a large number of researches that prove the reliability of the results obtained with their use within the established parameters. However, all of them are designed for a population of people who do not have a disability, and when someone is outside the standards set by them, they end up being removed from the research samples because they are outside the expected curve.

This fact significantly hampers the work of researchers who work with people who have deficiencies in Physical Education - or in other areas of health that need laboratory evaluations - and who end up not finding protocols capable of measuring essential aspects for the prescription of physical activities, treatments or therapies, especially when these people have Down Syndrome.

Unfortunately, this scenario can be entirely visualized in research laboratories; therefore, the search for alternatives that favor the performance of evaluations in populations, such as those with DS, becomes fundamental. Based on Henri Wallon's theory, the perspective presented in this experience report brings alternatives that facilitate the control of emotions during the tests and their understanding.

Realize it was found that by understanding how emotions directly interfere with the performance of tests and what causes such feelings to arise, the researcher acquires a vital and effective tool in controlling the research environment, preventing fear, discomfort, or ignorance from being impediments to carrying out studies.

The sometimes cold and insensitive environment of research laboratories, considering some specificities of certain groups, needs to be exchanged for a more humane, playful, and sensitive space when research is carried out with people who do not suit this environment and the methodologies proposed for the general public. This means treating those who present different behaviors and perceptions from most other people, in an appropriately respectful way, without losing the perspective of the seriousness and rigor with which a collection of scientific data must be carried out.

Such procedures cannot be confused with the infantilization of the researcher or their relationships with the research participant but rather with the adequacy of the treatment directed to the participant according to their conditions of understanding and carrying out the tasks and tests.

For Wallon (2005, p. 11), the child (and considering the specificity of this study, the person with an intellectual disability) only knows how to live his childhood (or his life). It is up to the adult to interpret it, know it, analyze it, and understand it to act on its development. Likewise, establishing an affective relationship between the two depends on the adult. And when there is a conflict between desires, as is the case with the application of unknown and often tedious and tiring tests in an unfamiliar and non-stimulating environment, it is up to the adult to seek alternatives to arouse the individual's desire.

For Aucouturier and Lapierre (1986, p. 77), it is up to the adult to create the conjunction of desires between the child and the adult, or the professional and the person with an intellectual disability, and not continue to the child or the intellectually disabled person, as is often required. Martinet (1981, p. 127) corroborates this issue by showing that affectivity has a preponderant place, and the communion and sensitivity that it establishes between individuals not only precedes but also prepares for intellectual exchange.

We, therefore, consider the search for an affective relationship favorable to the research participants, for assessing their behaviors, reactions, and attitudes towards the proposed tests as valid, as well as for seeking to know their daily life and using elements of this during the tests, can favor the tonic and postural balance necessary for data collection.

In this work, based on the sensitive observation of the adolescents' responses and their posture, a result of their feelings and emotions at that particular moment, the aim was to encourage participation in carrying out the tests without, however, failing to interrupt a test when necessary (due to fatigue, pain, discomfort or any discomfort), correct inappropriate behavior in the laboratory or create a permissive environment where the adolescent could behave as they saw fit.

At no time were issues such as ligament flaccidity, lack of balance, hypotonia, and other DS-related problems that could lead to and, in some cases, to the difficulty of carrying out the tests, always giving adequate time for the participant to recover, even if between one test and another it could take one or more days to restart the evaluation or to redo an interrupted test.

Thus, it is emphasized the need to stimulate from the simple measurement of weight and height to the permanence of 30 minutes immobile inside a device for body scanning, giving each of the attitudes of all the participants' importance and significance that can provide the desire to participate in the tests, in addition to showing pleasure in participating.

In this sense, Henri's theory of emotions Wallon proved to be adequate and relevant, as it provided a more in-depth view of the relationship between emotions and human movement, allowing the contextualization of the reasons why the research participants could not perform the tests and the possibility of body reading that enabled the researcher to know how to act in the face of the most different reactions and attitudes, always considering the triad of tonic manifestations: hypertonia, hypotonia and eutonia and the role of affectivity and playfulness to control these manifestations.

The need for an affective relationship between the adolescent with Down syndrome and the researcher was also considered fundamental, based on an experience before the application of the tests, as well as the knowledge of the daily life, tastes, pleasures, and activities of each participant of the search.

From the use of Henri's theory Wallon and what we can call a greater humanization of the process of evaluating people with Down syndrome in the laboratory, considering the characteristics arising from this syndrome as fundamental, from those that interfere with motility to those that interfere with the understanding and adequate performance of the tests the research participants were encouraged to participate in the study.

VI. By Way of Conclusion - Desire for the Future

> What will become of science if not a means
> to decrease, even if just a little, human misery?
> And what will become of the scientist
> if not the one who dreams with the possibility that,
> through their studies, Increase man's possibilities
> to dream... and fly...?

We consider laboratory evaluations by Physical Education essential for the prescription of physical activity for people with Down syndrome, given their importance for the conditions and quality of life, especially concerning the attenuation of problems arising from ligament laxity, generalized hypotonia, respiratory, cardiac, and balance and intellectual disabilities, among others. Such evaluations are

essential for defining an adequate job that does not accentuate existing problems.

However, it is necessary to search for adequate procedures and methods that consider the characteristics of DS to achieve success in laboratory evaluations.

Before delineating the paths followed in the experience reported here, the muscle strength, body composition, and hemodynamic tests applied to the same sample that participated in this study were unsuccessful. Many difficulties were encountered, but the main one was the difficulty of controlling emotions on the part of adolescents about professionals, materials, equipment, and the research site. From the search for adaptations that considered Henri Wallon's theory of emotions, especially about the interrelationships between emotion and reason and the forms of the flow of emotions through the tone of the posture, the tests were replicated, and there was a success in carrying out the research.

Still far from a path to be proposed as suitable for evaluation laboratory tests in the Physical Education of people with DS, we can say that the steps followed here, which are not intended to be considered as guidelines, can be a principle for proposing techniques for the application of laboratory tests in a respectful way that feels the individualities without losing sight of the need for rigor and seriousness of the scientific method. It may not be much, but we consider it an essential step in the search for a path shared and experienced by all, regardless of deficiencies and differences.

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