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Original Article

Evidence of the face, content, and ecological validity of the Aquaticity Assessment Test-Brazil for adolescents

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Abstract:
Assessment is an essential component of the teaching-learning process of aquatic skills in water sports. However, we found no tests that assessed and validated aquatic skills for the Brazilian adolescent population aged 12 to 14 years. This study aimed to develop and identify evidence of the face, content, and ecological validity of an aquaticity test for adolescents learning water sports. Since the survey was developed in three phases, the sample groups included five experts in water sports and 16 adolescents aged between 12 and 14 years for the face validation, and eight experts in water sports for the content and ecological validations. For the analysis of content validity, the Content Validity Coefficient was used. For ecological validity, the measure of central tendency of the median was applied, followed by the relative frequency of agreement for the competencies and aquatic modalities. Afterward, they were presented in the network model. Evidence of face validity was verified with the first group of experts and learners, with adaptations conducted based on the instructions of the Aquaticity Assessment Test-Brazil (AAT-Brazil) tasks. In the two phases of analysis, the AAT-Brazil demonstrated content validity for clarity of language (0.88 and 1.00), practical pertinence (0.86 and 0.92), and theoretical relevance (0.86 and 1.00). Regarding ecological validity, we found correspondence between the tasks and aquatic competencies, with the breathing present in most tasks of the AAT-Brazil. Task actions also corresponded with water modalities: swimming, water polo, artistic swimming, diving, and open water swimming. The AAT-Brazil presents satisfactory face, content, and ecological validity results, ensuring a valid and reliable aquaticity assessment. It has a protocol with clear and accessible instructions for adolescent assessment in the water sports learning phase.
Key Words: **water sports; evaluation; learning; aquatic.**

Introduction

The assessment of aquatic skills is essential for verifying the teaching-learning process of water sports. During an evaluation, the teacher identifies the progress of the learners (Ortizn, 2010), adjusts their performance, revisits the teaching plan, methodologically adjusts objectives, and identifies content not yet assimilated by the students. However, the absence of concrete criteria for evaluating these topics creates a gap while identifying flaws and makes it challenging to propose corrective activities (Sánchez & Tormo, 2007). For example, the "error correction" model considers only the ability of an elite athlete to be correct and excludes changes in the development continuum (Langendorfer, 2010). Similarly, a model that weights only the distance covered or performance given by time in competitions, a parameter used to evaluate the formation of aquatic skills (Ganchar et al. 2018; Ganchar et al. 2022), disregards the measurements of a wide range of skills necessary to prepare individuals for the various scenarios in water sports (Junge et al., 2010). Over the last four decades, several proposals have been suggested for evaluating the teaching-learning process of aquatic skills. The current assessment process has limitations such as restricting tests to infants and preschoolers (Andreu et al., 2018; Erbaugh, 1978; Langendorfer & Bruya, 1995; Moreno-Murcia et al., 2016), for newborns and children (Valentini et al., 2022), presenting only theoretical proposals (Canossa et al., 2007), and lack of consistency in experimental results, validity evidence, and evaluation criteria (Ortizn, 2010; Di Paola, 2019). Additionally, the most aquatic assessments are scored in a dichotomous way (pass versus fail), which does not allow for measuring the gradation of quality and, therefore, restricts the monitoring of the long term teaching-learning process (Tirosh et al., 2008). Therefore, is required a broader assessment model that consider the various aquatic competencies as criteria in a test (Junge et al., 2010) and moves away from models that restrict the assessment of a technique of a specific sport at a competitive level, which reinforces early specialization. The basic skills achieved and developed in the aquatic environment are fundamental for the development in water sports. In this sense, these

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fundamental skills create a "prerequisite" for the acquisition of more complex skills, such as those used in swimming, water polo, artistic swimming, comprising a set of motor skills that promote independence, displacement, and lift. Both in swimming, artistic swimming or water polo, most techniques require breathing, propulsion, and balance as basic contents (Canossa et al., 2007; Langendorfer, 2010; Langendorfer & Bruya, 1995; Murcia & Pérez, 2019). Considering such factors, the "Aquaticity Assessment Test" (AAT) was proposed from the concept of aquaticity (Varveri et al., 2016). The AAT evaluates aquatic competencies in 10 tasks, such as buoyancy, breathing control, propulsion, immersion and underwater swimming, visuo-spatial skills (i.e., shapes and colors identification and object manipulation without goggles, eye-hand coordination), and gliding, while considering the components that structure the aquaticity model. The test protocol contains the names of the tasks, descriptions, and scores ranging from 1 to 5. However, among the proposed tasks, the basic skills of somersaults and jumping into the water, considered in other tests, are not considered. In addition, the proposed instrument considers the characteristics of the Greek population (Varveri et al., 2016). This protocol was also applied in another study that evaluated children aged 8–9 years without experience of swimming or water activities (Karatrantou et al., 2019). However, no validation study of this instrument for the Brazilian population has been conducted, especially in teenagers. Therefore, the AAT needs to be adapted such that it includes the tasks and assessment criteria relevant to Brazilian adolescents. The aim of this study was to develop and identify evidence of the face, content, and ecological validity of a test assessing the aquaticity of adolescents in the learning phase of water sports.

Material & methods

Participants

This study consisted of three sample groups. The first group, responsible for preparing the protocol, was formed by five specialists: two experts with masters and three with doctor's degrees in physical education and experience in aquatic sports and instrument validation. The second group verified the face validity and was composed of 16 adolescents aged 12 to 14 years of both sexes; these were students of a swimming project in the learning phase of swimming: crawl, butterfly, backstroke, and breaststroke. These two sample groups were characterized as non-probabilistic for convenience (Etikan & Bala, 2017). The third group was composed of eight experts, who were selected on fulfilling the following criteria: training in physical education, minimum experience of 10 years (Hernández-Nieto, 2011) in water sports, and current teaching experience in higher education for at least three semesters; these experts participated in the content validity and ecological validity procedures. Our study followed the norms established by the National Health Council (Res. CNS 196/96), 1975 Declaration of Helsinki and all its future amendments for human research. The Research Ethics Committee of the Federal University of Mato Grosso (CAAE no. 21162719.7.0000.8124 and Opinion no. 3,717,903) approved the research.

Measuring instrument

The Aquaticity Assessment Test-Brazil (AAT-Brazil) is designed with tasks as shown in Chart 1. Each task presents the objective, description, materials, space, procedures, standardized instruction of the evaluator, criteria for task assessment, figure, and datasheet evaluation. The task is scored according to established criteria, and the scores range from 0 (did not perform the task) to 3 or 4 (met the criteria). Before a valid attempt, a familiarization attempt must be assigned, except for tasks 4 and 5.

Chart 1. Description of the tasks of the Aquaticity Assessment Test-Brazil

Task	Task Name	Object
1	Buoyancy and surface balance	Maintain buoyancy in prone and supine position for 10 seconds each, performing a turn to change position.
2	Breathing control	Maintain control of breathing by inspiration out of water and exhaling with the head submerged (airway immersed) rhythmically.
3	Glide in underwater hydrodynamic position	Gliding under the surface of the water, starting, push-off the wall with both feet in a favorable hydrodynamic position.
4	Free movement at 25 m near the surface	Move 25 meters as close to the surface.
5	Adequacy of physical fitness in water	Move freely for three minutes with the body or part of it close to the water surface without interrupting the movement.
6	Vertical support with the head out of the water	Keep your body upright so that your head is out of the water.
7	Underwater Senses-Vision	Identify objects with different shapes and handle other objects (rings) by placing them on a string without wearing goggles.
8	Underwater Senses-Hearing	Recognize the number of sound stimuli.
9	Underwater swimming	Perform the displacement over a maximum of 15 meters with the body fully submerged.
10	Expiratory immersion	From the floating in a prone position, submerge the body, exhaling air.
11	Entry into water	Entering the water via a jump, creating as little drag as possible.
12	Surface slide followed by a somersault	Glide on the surface and perform a spin (somersault).

Validation procedures

A total of four procedures were considered to verify the validity evidence: (1) elaboration of the protocol, (2) face validity, (3) content validity, and (4) ecological validity. The first procedure referred to the elaboration of the AAT-Brazil, based on the AAT (Varveri et al., 2016), which originally comprises 10 tasks (1. Surface buoyancy and balance, 2. Breathing control, 3. Underwater hydrodynamic position, 4. The surface-freestyle swimming technique, 5. Physical fitness in water after 5 min of continuous swimming, 6. Treading water 7. Underwater vision, 8. Underwater hearing, 9. Underwater swimming: dynamic apnea, and 10. Expiratory diving). We considered the specificity of the cultural context; formulated new instructions, procedures, evaluation criteria, and illustrations; and added tasks 11 (entering the water) and 12 (slide on the surface followed by somersault).

Regarding face validity, the participation of two groups was ensured to measure the instrument's desired qualities; experts were included for their experience and understanding, and young people were included as they fit the characteristics of the population for whom the instrument is aimed. In the first stage, after the clarity of the instructions had been judged, the five experts requested adjustments to the protocol. In the second stage, the 16 participants in the swimming project received instructions from the researcher to complete all the tasks in the instrument. After each instruction, students' doubts and performance in each task were recorded using notes. The test applications were scheduled in the pool where the swimming lessons took place.

For content validity, the Content Validity Coefficient (CVC) (Hernández-Nieto, 2011) was used to measure the degree of agreement of the answers given by the experts in two rounds. This procedure was performed asynchronously using Google Forms in the first round. In the second round, the Delphi method was applied in an adapted way to obtain and refine the experts' opinions to reach a consensus among their answers. The protocol was restructured after receiving the first analysis and suggestions from experts (Round 1). Individualized synchronous meetings were scheduled between the experts and the main researcher to re-analyze the protocol by videoconference (Round 2) (Flostrand et al., 2020). Throughout procedure 3, the degree of agreement between the experts was indicated by the CVC and the experts evaluated each item according to the criteria of language clarity, practical pertinence, and theoretical relevance; items were rated on a 5-point Likert scale that ranged from 1 (very little satisfactory) to 5 (very satisfactory).

Lastly, for ecological validity, the researcher verbally asked the experts about the relevance of the water competencies in each task and the actions of the proposed tasks for the aquatic modalities. The water competencies are propulsion, breathing, buoyancy, glide, rotation/turning, manipulating objects, jumping, and immersion. The water modalities, according to the International Swimming Federation (FINA), are swimming, diving, artistic swimming, water polo, and open water, except for high diving, as it is not an Olympic sport. The following questions were asked: (1) What is the relevance of the water skills identified in each task? (2) What is the relevance of the actions of the proposed tasks for the aquatic modalities? Responses, obtained for the analysis, were rated on a 5-point Likert scale that ranged from 1 (irrelevant) to 5 (very relevant).

Data analysis

For data analysis, the Microsoft® Excel® 2010 program was used to calculate the CVC of the items in the instrument and the initial analyses of ecological validity. For the analysis of the CVC, the classification proposed by Hernández-Nieto (2011) was used: the CVC was considered deficient between 0.6 and 0.7, acceptable between 0.71 and 0.8, and in good agreement when ≥ 0.8.

For ecological validity, the measure of central tendency of the median (Md) was applied, followed by the relative frequency of agreement for the competencies and aquatic modalities. In this way, the number of evaluations loaded with values of 4 and 5 points (relevant and very relevant) in each task for each competence and aquatic modality was counted, divided by the total number of experts, which generated the agreement indicator. For greater rigor, only cases with greater than 50% agreement were used in the network model, through the Igriph R® and Gephi®, which generated the relative arc thicknesses.

Results

Face validity

The five experts weighted all the AAT-Brazil tasks regarding the organization of the written structure, description, procedures, and instrument instructions. In addition, information regarding the depth in the pool, the position of the subject, and the distances covered were included to improve the knowledge of the actions by the learners. Terms such as pronated, supine, ventral, immerse, emerge, inhale, and exhale were replaced in the standard instructions. The items with the most suggestions were tasks 7 (Underwater senses-vision) and 8 (Underwater senses-hearing), mainly in the standardized instruction of the evaluator.

The application of the AAT-Brazil to young swimming students followed the order of the current protocol, as shown in Chart 1. The observations indicated that, regarding understanding the instructions for the tasks, two apprentices were asked to repeat task 7, and one was asked to repeat task 10 (Expiratory immersion). In task 5 (Adequacy of physical fitness in water), an apprentice who placed his feet on the ground reported that this instruction was not transmitted. As for the execution of the intended action, according to instructions and criteria, in task 7, only one apprentice delivered only the cord without identifying the figures. In addition, tasks 9

and 10 were readjusted considering the execution. Thus, all tasks were readjusted to qualitatively increase the understanding of the instrument.

Content validity

Table 1 shows the results of the CVC of the first and second phases of the content validation for the AAT-Brazil tasks.

Table 1. CVC results of the two phases of content validation of the items that constitute the AAT-Brazil.

Task	Clarity of language		Practical pertinence		Theoretical relevance	
	CVC*c* 1ªphase	2ªphase	CVC*c* 1ªphase	2ªphase	CVC*c* 1ªphase	2ªphase
1	0.90	1.00	0.92	0.97	0.95	1.00
2	0.95	1.00	0.92	0.95	0.92	0.95
3	0.90	0.95	0.95	0.95	0.97	0.97
4	0.90	0.92	0.87	0.97	0.82	0.95
5	0.82	0.90	0.77	0.92	0.70	0.92
6	0.85	1.00	0.90	0.97	0.90	0.92
7	0.85	0.92	0.90	0.90	0.87	0.95
8	0.85	0.97	0.65	0.77	0.67	0.80
9	0.85	0.97	0.80	0.97	0.82	0.95
10	0.92	1.00	0.72	0.77	0.80	0.80
11	0.87	0.92	0.95	0.92	0.92	0.92
12	0.92	0.97	0.90	0.97	0.90	0.92
Total CVC	0.88	0.96	0.86	0.92	0.86	0.92

Note: CVCc: final content validity coefficient for each item.

In the two phases of the analysis, good agreement of the CVCc (≥0.8) was observed for clarity of language and most items in the dimensions of practical pertinence and theoretical relevance. Acceptable levels of agreement (between 0.71 and 0.8) were observed for practical pertinence and theoretical relevance dimensions in tasks 5, 8, and 10. However, deficient levels (between 0.6 and 0.7) were observed for practical pertinence and theoretical relevance for tasks 5 and 8. In task 8, the deficient level changed to acceptable and good agreement in the practical pertinence and theoretical relevance dimensions. In task 5, the acceptable classification changed to good agreement, and in task 10, the same classification was maintained for the dimensions of practical pertinence and theoretical relevance.

Ecological validity

Figure 1 shows the correspondence model between the investigated aquatic tasks and competencies based on the thickness of the relative arc.

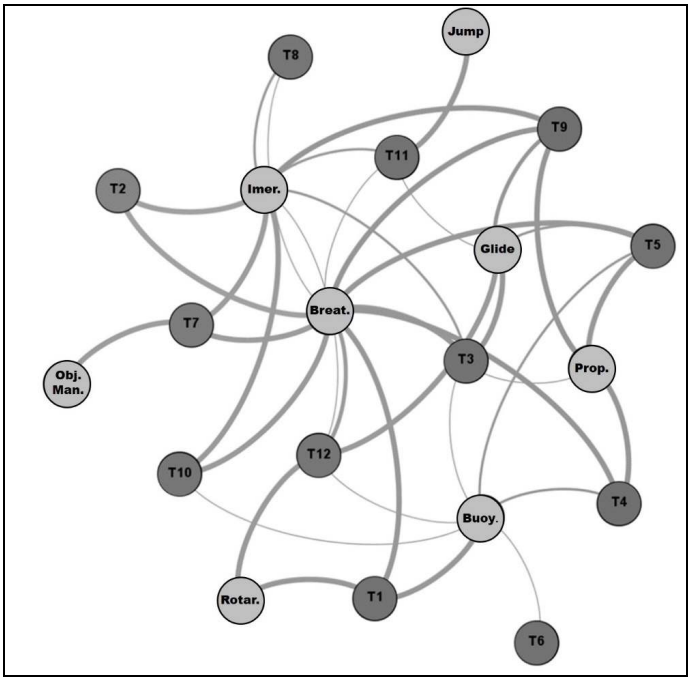

Figure 1. Model of the correspondence between the tasks and competencies

Notes: T1: buoyancy and surface balance, T2: breathing control, T3: glide in underwater hydrodynamic position, T4: free movement at 25 m near the surface, T5: adequacy of physical fitness in water, T6: vertical support with the head out of the water, T7: underwater senses -vision, T8: underwater senses -hearing, T9: underwater swimming, T10: expiratory immersion, T11: entry into water, and T12: surface slide followed by a

somersault. Buoy.: buoyancy; Obj.Man.: object manipulation; Prop.: propulsion; Glide: glide; Breat.:breathing; Jump.: jumps; Imer.: immersion; Rotar.: rotation. The arc thickness is relative to the percentage of the agreement (greater thickness and greater correspondence agreement).

Considering the correspondence between the tasks and competencies based on the agreement, as shown in Figure 1, breathing was present in most tasks of the AAT-Brazil (T1, T2, T3, T4, T5, T7, T8, T9, T10, T11andT12), followed by immersion skills (T2, T3, T7, T8, T9, T10, T11 and T12), fluctuation (T1, T3, T4, T5, T6, T10 and T12), slide (T3, T5, T9, T11and T12), propulsion (T3, T4, T5 and T9), rotation (T1 and T12), object manipulation (T7), and jumps (T11).

Figure 2 shows the correspondence model between the actions of the tasks and aquatic modalities based on the thickness of the relative arc.

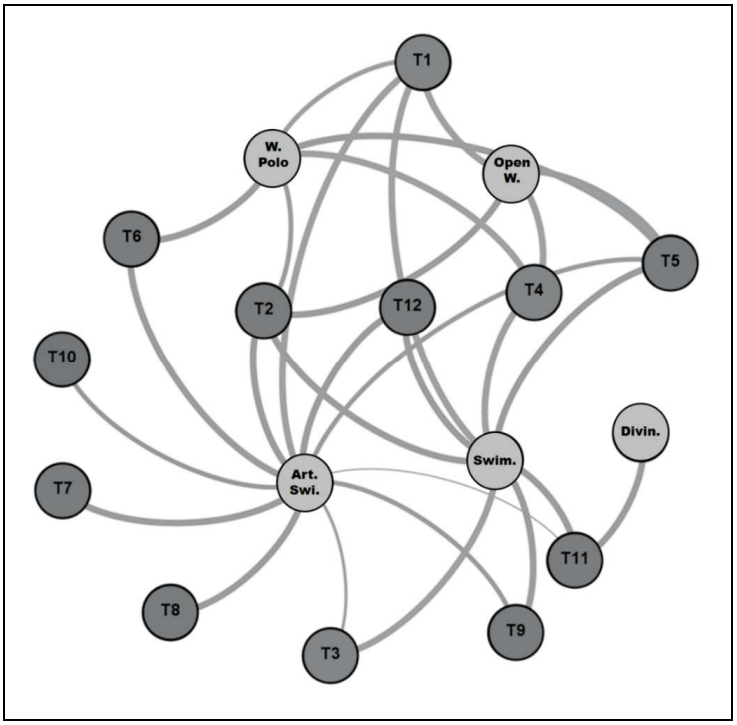

Figure 2. Model of the correspondence between the tasks and modalities

Notes: T1: buoyancy and surface balance, T2: breathing control, T3: glide in underwater hydrodynamic position, T4: free movement at 25 m near the surface, T5: adequacy of physical fitness in water, T6: vertical support with the head out of the water, T7: underwater senses-vision, T8: underwater senses-hearing, T9: underwater swimming, T10: expiratory immersion, T11: entry into water, and T12: surface slide followed by a somersault. Swimming; Divin.: diving; Art. Swi.: artistic swimming; W. Polo: water polo; Open W.: open water. The arc thickness is relative to the percentage of the agreement (greater thickness and greater correspondence agreement). Considering the correspondence between the actions of tasks and modalities, as shown in Figure 2, artistic swimming was represented in most of the AAT-Brazil tasks (T1, T2, T3, T5, T6, T7, T8, T9, T10, T11 and T12), followed by swimming (T1, T2, T3, T4, T5, T9, T11 and T12), water polo (T1, T2, T4, T5 and T6), open water (T1, T2, T4 and T5), and diving (T11).

Dicussion

This study aimed to develop and identify evidence of the face, content, and ecological validity of a test that aimed to assess the aquaticity of adolescents in the learning phase of water sports. Considering the results in Table 1, 12 items were maintained in the AAT-Brazil. Limited studies on the exact nature in the context of aquaticity made it necessary to explore studies from other sports to discuss the findings.

In the first stage of the face validity, the experts considered the AAT-Brazil items clear and adequate to assess the aquaticity of adolescents in the learning phase. However, considering the specific context and culture of the target audience, Brazilian adolescents, 12 tasks were adapted and considered. This validation process was proposed by Olaisen et al. (2017), who highlighted the importance of this type of validation by a panel of experts with extensive experience in swimming. However, the authors did not explain the validation procedures and the face validity results of the instrument they proposed in the study. In the second stage of the face validity, we aimed to verify the learners' understanding of the task instructions and their ability to perform the requested actions, which would have demonstrated the clarity and understanding of the tasks. It was found that most instructions were clear and accessible; however, four tasks still required readjustment at this validation step.

Task 7 (underwater senses-vision) required further adjustments, as it simultaneously required a combination of different skills and actions. The underwater vision contained therein has been a part of most evaluation proposals found in the literature till date (Erbaugh, 1978; Langendorfer & Bruya, 1995; Moreno-Murcia et al., 2016; Olaisen et al., 2017), although it was not included in the skills considered essential for the learning phase of swimming. Considering the understanding of the instructions, most learners performed the intended actions in line with the AAT-Brazil protocol for tasks 7, 9, and 10. Morgado et al. (2019) also maintain two items from the 17 that were part of the Perceived Water Competence Scale (PWC-PS) after the face validity stage. The authors indicated a good understanding of the scale as a whole while keeping the 17 items.

The AAT-Brazil content validation procedure revealed satisfactory results regarding the maintenance of the 12 items, with the total CVC during the two phases of evaluation being, respectively, 0.88 and 1.00 for language clarity, 0.86 and 0.92 for practical pertinence, and 0.86 and 1.00 for theoretical relevance, hence showing a "good agreement" (Hernández-Nieto, 2011). These findings were similar to the results of previous studies by Andreu et al. (2018), who validated the Aquatic Evolutionary Development Inventory (IDEA), Monteiro et al. (2020), who validated the instrument for the assessment of organizations and types of practice and pedagogical feedback (APFP), and Valentini et al. (2022), who investigate the validity content of Aquatic Readiness Assessment (ARA). Although the total CVC showed an increase in the second phase of the assessment, the breathing and fluctuation competencies had higher values for the criteria of practical pertinence and theoretical relevance criteria, which corroborated the primary competencies developed by the analytical teaching of swimming, together with propulsion (Costa et al., 2012). In addition, it is noteworthy that even in the initial stages of learning water sports, the traditional models are centered on pedagogical sequences for teaching competitive swimming (Canossa et al., 2007; Langendorfer, 2010), due to a lack of content relevant to other aquatic modalities. After observing swimming initiation classes, Fiori et al. (2019) corroborated the finding of the prevalence of teaching practices restricted to the repetition of the technique of sports swimming. This was also confirmed by Monteiro et al. (2021), who found that the technical nature of the content and the teacher's performance-oriented feedback criteria occurred 78.6% of the time in classes for children in the diversification phase of their swimming styles.

However, it is noteworthy that tasks involving hearing, vision, underwater swimming, expiratory immersion, and vertical support reached higher values of relevance in the second phase of the expert assessment. A variety of water competencies must be encouraged so that the individual chooses the best response in the array of possible situations in this environment (Junge et al., 2010). In addition, the practice of various displacements allows the learner to face new situations and understand the forces of the environment, which helps them acquire different forms of balance, support, and propulsion (Fiori et al., 2019). Such findings, considering the basic competencies for the development of sports actions in water and the prevention of drowning of the theoretical proposals (Canossa et al., 2007; Olaisen et al., 2017; Stallman et al., 2017), provide evidence for the selection of the competencies assessed in the present study: breathing, immersion, propulsion, buoyancy, sliding, turning, handling objects underwater, and jumping.

It is opportune to assume the approximation of the AAT-Brazil actions in the real context of learning water sports. When analyzing the ecological validity of the instrument, the logic that the proposal of aquaticity involves the usual and vital capacity of the individual in the water should be considered. Given this, they need to control the skills necessary for the development of these capacities in real contexts. Hence, there was a need to consider such competencies and their relevance in the proposal. It became possible to reveal the representativeness of the test, since all competencies were deemed relevant in at least one task. Breathing had the most significant correspondence with the tasks of the AAT-Brazil. In addition to being a competence considered in studies that propose evaluative instruments (Andreu et al., 2018; Canossa et al., 2007; Langendorfer & Bruya, 1995; Olaisen et al., 2017; Varveri et al., 2016), it should be the first competence to be developed, and is fundamental in the achievement of aquatic competence (Langendorfer, 2015). Immersion was the second most relevant competence. In addition to being contemplated in the studies above, this competence was considered in another proposal for an evaluative instrument (Junge et al., 2010). Aquatic competencies are considered pillars or bases in the teaching-learning process, as they are precursors of specialized sports skills (Mercado et al., 2016). In this way, the correspondence between the actions involved in the proposed test and the aquatic modalities part of the FINA framework was revealed. Considering the importance of analogous abilities involved in aquaticity and the necessary competencies based on specialized skills of aquatic sports, there is a need for relate the proposal to sports developed in the aquatic environment.

The results of the ecological validity demonstrated the appropriateness of the aquaticity proposal (Varveri et al., 2016), since this validity ascertained the theoretical framework of the assessment instrument. To achieve water competence, according to a model by Langendorfer and Bruya (1995), it is necessary to participate in a set of activities in the water, including swimming, water polo, and artistic swimming. In addition to the actions of all tasks that showed correspondence with the investigated modalities, it was highlighted that those of task 2, which directly involved breath control, were considered the most relevant in swimming, water polo, artistic swimming, and open water. It is noteworthy that aquatic modalities require as much respiratory control as

the respiratory block in the inspiration and expiration cycles. Canossa et al. (2007) reported that breathing is one of the fundamental skills for development in swimming, water polo, artistic swimming, and diving.

Artistic swimming was the modality that presented the most significant correspondence with the AAT-Brazil tasks. Varveri et al. (2016) reported that practitioners of artistic swimming must develop a more complex adaptation to water. This was due to the sport's high demands compared to other water sports. The need to synchronize movements with music (underwater listening), control and respiratory block, buoyancy, underwater orientation (vision), displacements, slips, and rotations was highlighted. These findings corroborated the results of Raspopova et al. (2020). In their study, individuals in the experimental group who participated in a teaching program focusing on the specialized skills of artistic swimming, showed significantly higher results compared to individuals in the control group, who received classes according to the traditional teaching method of swimming. Another action considered very relevant for both artistic swimming and water polo was the vertical support, presented in task 6. Treading water is one of the most versatile and essential water competencies. For example, it can be an alternative method to rest and stop. It is fundamental not only in water polo, but also for participation in various water sports and survival in the water (Di Paola, 2019; Stallman et al., 2017).

Although a weak correspondence was found between the actions of the AAT-Brazil tasks for diving, when considering them, it is essential that after the athlete enters the water, they control the immersion, the exhalation of the air, the ability to locate the pool exit edge wall with the body still submerged, surface recovery, and displacement (whether diving or swimming) to the edge of the pool (Stallman et al., 2017). This intensifies even more as the jumps occur in pools with significant depths for practice. According to Canossa et al. (2007), the educational potential of diving has not been explored due to the lack of jumping platforms, a reality found both in Portugal, where the study was conducted, and in Brazil. Hence, this may suggest unrepresentative indications of this modality in the present study.

Conclusions

The study revealed satisfactory results for the face, content, and ecological validity of AAT-Brazil. Evidence of face validity showed the instrument to be understandable by the target audience, and the results of the content validity revealed the AAT-Brazil as a clear and relevant instrument. The actions of the tasks proposed involve the basic water competencies for performing water sports and correspond to the water modalities of artistic swimming, swimming, open water, water polo, and diving. Such results indicate that the assessment by the aquaticity test is valid and reliable. Hence, the evidence obtained through the validation processes of the AAT-Brazil test allowed us to assess the level of aquaticity in the learning of water sports through water competencies. Our findings provide relevant information to assist teachers and technicians in the assessment procedures and the planning of the teaching learning process in water It is recommended that those interested in using the test understand aquaticity in a universal way, without relating it to traditional models of teaching and assessment of swimming. As a limitation, the fact that aquaticity is little known in the scientific community may have interfered with the experts' analyses. Future studies that contemplate the experimental phase of the AAT-Brazil before applying it to apprentices of water sports are recommended.

Conflicts of interest - The authors report there are no competing interests to declare.

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