

DEVELOPMENT OF WATER RECOGNITION SKILLS TRAINING MODEL IN INTELLECTUAL DISSABILITY

Wendri Maryadi¹, Achmad Sofyan Hanif², Wahyuningtyas Puspitorini³

Universitas Negeri Jakarta^{1,2,3}

maryadiwendri01@gmail.com¹ sofyan_dean@yahoo.com² tyashs22@yahoo.co.id³

Abstract

Children who first practice swimming, must first be introduced to the properties of water. The introduction of water really needs to be applied to all those who want to learn swimming specifically for children with intellectual disabilities, of course it is very important to do water swallowing. The achievement of objectives in the training process cannot be separated from the role of the trainer in creating a harmonious training atmosphere in the training environment. The purpose of this study was to develop a water recognition exercise model for mentally retarded children. The development of this research refers to Borg and Gall. The subjects in this study were 42 students. Data collection techniques carried out by observation, study documentation, interviews, and tests. Data analysis was carried out qualitatively and quantitatively. The development of the model through small trials, large trials and effectiveness tests. Test the effectiveness of this water recognition model using the significance test Pre-test and Post-test significance test for differences with SPSS 25 in the results of t -count = -28,971, $db = 43$ and p -value = 0.00 & $lt; 0.05$ which means that there are significant differences in the ability of students before and after being given a water recognition skills training model in mentally retarded children. In this study conclusions can be drawn. (1) Model of water recognition skills training exercises for mentally retarded children can be developed and applied in training mentally retarded children (2) Models of water recognition skills training exercises for mentally retarded children can effectively improve the water recognition abilities of mentally retarded children.

Keywords: Water recognition; Swimming; Dissability

Submitted : 21th of April 2022

Accepted : 07th of July 2022

Published : 14th of July 2022

Correspondence Author: Wendri Maryadi, Universitas Negeri Jakarta, Indonesia. E-Mail: maryadiwendri01@gmail.com

DOI <http://dx.doi.org/10.31851/hon.v5i2.7869> 



Jurnal Laman Olahraga Nusantara licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/)

INTRODUCTION

Sport is a physical activity that is very popular in various circles of society. Regardless of status, gender, and age everyone can exercise. Sports are all systematic activities to encourage, foster, and develop physical, spiritual, and social potential (Jarvie, 2016). As a form of physical activity, exercising can increase

physical potential such as training the muscles of the body, as well as training the working system of the lungs and heart so that they can provide benefits in the form of physical fitness and health maintenance.

Sport is also one of the entertainment for the lover because in sports other than cultivating the body or making the body healthy it also shows actions that pamper the eyes in an appearance that can be seen directly or through the media and even many people even misuse the function and purpose of the sport including in terms of the negative is that many also make sports a gambling ingredient. The lack of psychological research in the last few years has resulted in one's efforts in completing tasks, adding aspects to life for many years is a goal to motivate people. This is based on the goals and benefits of life and sports (Polson, 2013).

Children who first practice swimming, must first be introduced to the properties of water. When children already know the properties of water, surely the fear of water will disappear and confidence will grow. The introduction of water is very necessary for children who are just growing up and developing because in that phase the child is very fond of doing water activities both at home, swimming or on the beach, water recognition is very necessary to be applied to all those who want to learn swimming specifically in children mental retardation is certainly very important to do water swallowing.

Mental retardation is a condition of a child whose intelligence is far below average which is characterized by limited intelligence and inadequacy in social interactions. Mental retardation (MR) is a genetic disorder that is manifested in significantly below average overall intellectual functioning and deficits in adaptive behavior (Armatas, 2014). Children with mental retardation or also known as mentally retarded because of the limitations of intelligence are difficult to follow education programs in ordinary schools classically, therefore mentally retarded children need special educational services, which is tailored to the child's ability. Diagnosing mental retardation in early childhood and identifying its causes might be helpful in reducing the frequency of this condition (Foroutan, 2014).

Water recognition training activities taught can be provided by modifying the training model, with a simple, usual context that is only done in an iterative manner which can certainly create a child's boredom. With this development through approaches such as play, media and so on, the introduction of water can be given by directing children to do well, creating a happy atmosphere, so that it can lead to children's motivation in following the exercise and can improve the water recognition skills needed. In connection with the use of media in learning activities, instructors or teachers need to be careful in the selection and or determination of the media to be used (Riyanto, 2016).

Water recognition sports are really needed by everyone, men, women, adults, children, teenagers and even parents, who still make sports that are water recognition with the aim of professional entertainment, fun, throwing away, bored always on land and dealing with several problem. Aquatic is an activity in the water with the aim of training children to advance their motor, cognitive, affection and social potential (Kusumaningrum et al., 2019). At all times, the introduction of water itself is a tool to provide ideas for learning to swim, and leads to the development of correct swimming techniques with an easy and appropriate range by means of basic training in water and is free, safe, enjoyable, beneficial, even there are exercises that make a big challenge, technical training is training to improve the movement techniques needed to be able to do sports that athletes do. Exercises must be in accordance with the conditions that are desired to be achieved with a simple program and do not make children quickly bored and shouldered when doing.

In conducting the pumping technique exercise, it is suggested that when applied to the athlete, the athletes should not use elite athletes models or examples, because their techniques may not physiologically meet biomechanical requirements, so here it is recommended to use models that are acceptable to athletes namely models the biomechanical and physiological suit of the athlete. The designs illustrate one approach to interactive training for a specific sport, and there are few frameworks or reviews reflecting across a range of examples (Jensen et al.,

2014). Children with mental disabilities are a term used to refer to children who have intellectual abilities below average, in the literature of foreign languages used the terms mental retardation, mentally retarded, mental deficiency, mental defective, and others. In Indonesia mental retardation is called the weak mind, mentally retarded, stupid or stupid, pander, stupid, oligophrenic, able to educate, able to train, and full dependence.

Life below the average intellectual ability, weakness in adaptive attitudes, and have genetic disorders can be interpreted as mental retardation. The presence of signs in children with reduced intelligence and adaptability and experiencing abnormalities in growth in general is a definition of mental retardation (Armatas, 2014). The statement above states that mental retardation (MR) is caused by abnormalities in genetic have a significant effect on intellectual functioning below the average so that it affects the adaptive behavior of children. Mental retardation occurs in certain circumstances that begin in childhood and is characterized by a decrease in intelligence and adaptive skills and is also the most common developmental disorder.

Furthermore, according to Santrock that mental retardation is a condition with symptoms before the age of 18 years that involves low intelligence that is IQ under 70 and difficulty in adapting to daily life 5 (Devi, 2003). This is reinforced by R. Schalock, et al who said that "Intellectual disability is characterized by significant limitations both in intellectual functioning and in adaptive behavior as expressed in conceptual, social, and practical adaptive skills. This disability originates before age 18 (Silverstein et al., 2011). The statement above says that intellectual disability is characterized by significant limitations in both intellectual functioning and adaptive behavior as expressed in conceptual, social, and practical adaptive skills. This defect originates before age from some experts' opinions it can be concluded that, mentally retarded children are those whose intelligence is below normal average, difficult in adjusting to the environment, and less capable in thinking about abstract things so they find it difficult to follow the program classical

school education. Therefore, they need special services and guidance tailored to the child's abilities.

Developmental impairment as a disorder that includes general intellectual functions below the average, namely IQ 84 and below based on tests and appears before the age of 16 years (Fogelman, 2012). mentions that "mental retardation is closely related to the problem of developing low intelligence abilities and is a condition". Mental Retarded is not a disease but a condition (Rainer Weber, 2015). So, based on the above statement it can be confirmed that mental retardation is a condition that cannot be cured with any medicine. Planning, implementation and delivery of customized aquatic and rehabilitation services for individuals with disabilities. There are benefits of water sports (from the psychomotor, cognitive, affective, and educational domains), and a classification system for competitive swimming (Phillip Conatser, 2007). Water recreation, education, and therapy have all been recognized as means to develop physical and motor fitness, social skills, and self-esteem in individuals with disabilities (Preist, 2013) (Archer, 2012).

Teachers should prioritize strategies, teaching methods, and use of equipment in providing aquatic materials to persons with disabilities (P Conatser & Block, 2011) (Gelinas & Reid, 2015). In this integrated aquatic program, students with disabilities must have the same opportunities to participate as non-disabled students (Lieberman & Wilson, 2015). In addition to introductory water aerobics programs, and competitive swimming teams, instructional swimming lessons should be made and reasonable modifications to allow individuals with disabilities to participate in activities successfully and safely (P Conatser, 2012) (Wykle, 2013).

Although water activity is not a cure for all life problems, aquatic activities have added to the quality of life through physical and mental health benefits (American Red Cross, 2017). Teacher candidates need special aquatic training to work with students with disabilities to provide instruction that matches their knowledge and skills (Sato et al., 2015). Aquatic adaptation has proven useful for physical education teachers with the aim of helping students with disabilities to increase physical activity as well as facilitating more social opportunities with peers

(Ortiz-Castillo & Hodge, 2011). Water recognition programs and practices at each swimming pool facility may vary. However, usually the water introduction activities include activities such as: stand with both arms straight, bend forward, place both feet on the pool floor until the body is pushed forward in an expanding stance and slides.

METHOD

The purpose of this study was to develop a water recognition exercise model for mentally retarded children. Participants in this study were 42 students intellectual dissability. Data collection techniques carried out by observation, study documentation, interviews, and tests. Data analysis was carried out qualitatively and quantitatively. Research and information collecting, planning, develop preliminary form of product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation (Borg, W.R. & Gall, 2009). To obtain the feasibility level of product development and to measure the level of product effectiveness in improving water recognition skills in intellectually disabled children, the experimental design was one group pretest and posttest. In the following, the lattice of water recognition instruments will be described.

Table 1. Grid of Water Recognition Assessment Instruments

Skills	Variable	Value Scale				Amount
		1	2	3	4	
Water Recognition for Children with Disabilities	Jump into the water Walk forward Step backward Kicking feet Put your head in the water Dive and pick up the ring					

Description of Value Scale by (Zhu & Erbaugh, 2015):

- 1 : the child stands in chest-deep water, partially dips his head in the water and is accompanied by the teacher.
- 2 : the child is standing in the water at chest level, completely submerging his whole head in the water. Not taking the ring and not being

- accompanied by a teacher.
- 3 : the child slides in a 2 meter prone position by putting his head in, manages to take the ring at the bottom of the pool and without the help of the teacher.
 - 4 : the child slides in a prone position for 4 meters, then takes the ring from the bottom of the pool, stands at chest level and without the help of the teacher.

RESULTS

Based on the results of observations made to swimming coaches are as follows: the criteria for 8 trainers who train swimming are included in the category of being quite good at introducing swimming exercises. The ability of children with disabilities increases very slowly compared to others, or will not increase at all if they are not developed properly. Coaches can see the delay in achievement in terms of chromosomes. If the coach can't see it from the chromosomes, they can see it from the time the child is still a baby. Children who have intellectual disabilities (ID) will usually be difficult to communicate with so that their kinesthetic abilities, especially swimming, will be difficult to develop or not mastered at all if they are not developed properly. This study reveals several findings as the first step in the introduction of swimming in children with intellectual disabilities. Before the training model is applied to ID children, validation is carried out to experts to test theoretically.

Based on the results of the assessment of the adaptive physical education learning expert, the percentage was 81.94% or in the good category. Suggestions and inputs about the water introduction exercise model are as follows: 1) in the process of developing learning models it is necessary to pay attention to the facilities and infrastructure needed, 2) all facilities and infrastructure used in research should be free from external factors that can thwart the implementation of the research itself, 3) the facilities used in the research in the form of buoys, rings and other facilities must be ensured that the conditions are completely safe and do not interfere with the smooth running of the research.

The results of the validation of motor learning experts stated that the water recognition exercise model for children with intellectual disabilities obtained a

percentage of 79.17%. Some suggestions and inputs given by motion experts for improvement in the development of water recognition training models are as follows: 1) researchers must pay attention to and understand water recognition exercises for children with intellectual disabilities, 2) Similar exercise models need to be combined or removed so that one can be implemented. the trial becomes more efficient, 3) arrange some of the models from easy, medium and difficult, 4) choose a training model that is superior and has a better effect than other training models in improving water recognition skills.

The results of the analysis of the small group trial data obtained a percentage of 81.74% which indicates a good category. Meanwhile, the data from the observation of the small group trial of the water recognition exercise model stated that all models could be practiced by the participants. From the results of trials and observations of researchers in the field, it can be concluded that: 1) Before participants practice the water recognition model, the trainer should give direct instructions to children so that there are no errors during implementation, 2) The water recognition exercise model can be practiced by intellectually disabled children properly. but it must be emphasized on its implementation so that children always focus on every movement that is practiced, 3) The variation of the exercise model that has been made is good but needs good planning and implementation management.

Based on the results of the data analysis of filling out the large group trial questionnaire, it showed a percentage of 81.90% with good classification. All water recognition learning models developed can be practiced by all students. During 6 meetings the researchers saw the benefits of the learning products developed. Based on the results of observations, it was found that students had special attention to the material taught by the teacher such as being interested, happy, and not afraid when they were in the swimming pool. All students also actively participate during the learning process which means that when practicing the learning model there are no longer students who are silent/out of the teacher's control while in the swimming pool. The students' ability to understand and practice the water introduction material

is also good. So, based on the results of data analysis and observation of large group trials, it can be concluded that the water introduction learning model is useful and feasible for use in mentally retarded children.

The product effectiveness test was made using a pretest-posttest control group design, namely the experimental group and the control group which were selected randomly. The pre-test was conducted to determine the initial value of the experimental group and the control group by testing the water recognition skills according to the instrument that had been made. At this stage the researcher conducted a trial for 10 meetings by applying all the learning models developed in the experimental group. From the results of the pre-test and post-test analysis of the mean difference in the control group, it was obtained that t_0 was 5.966 and t_{table} was 1.721 with degrees of freedom (db) 21 and $\alpha = 0.05$. Thus, $t_0 = 5.966 > t_{table} = 1.721$. There is a difference between the initial test and the final test of water recognition skills in students who are given the training method from the trainer. Although there was an increase in the control group, it has not proven that the method applied by the trainer in the control group is effective compared to the developed water recognition exercise model. Therefore, it needs to be proven empirically and compared with the experimental group to determine the effectiveness. The results of the model effectiveness test will be explained in table 2 and table 3 below:

Table 2. Statistical Analysis of Control Group

		Mean	N	Std Deviation	t_0	t_{tabel}
Pair 1	Pre-test	14,762	21	2,896	5,966	1,721
	Post-test	15,810	21	2,480		

Table 3. Statistical Analysis of the Experimental Group

		Mean	N	Std Deviation	t_0	t_{tabel}
Pair 1	Pre-Test	15,714	21	2,432	31,623	1,721
	Post-Test	19,05	21	2,355		

Significance test in knowing the difference in the mean in this study. The mean pre-test was 15,714 and post-test was 19,05. The results of $t_0 = 31.623$, db = 21, and $\alpha = 0.05$. The data obtained from the mean difference test results have

differences after the treatment of the application of the water introduction learning model for children with intellectual disabilities. From the post-test results, the exercise model developed had positive results because there was a significant difference in the post-test scores compared to the pre-test results. Therefore, the water recognition learning model has proven to be effective and can be used as one of the training materials for children with intellectual disabilities. To determine the effectiveness of the product development model for the introduction of water, the researchers used a test of the difference in the mean post-test scores (final test) between the experimental and control groups in table 4. below.

Table 4. Statistical Analysis of Post-Test Control and Experiment Group

		Mean	N	Std Deviation	t ₀	t _{table}
Pair 1	Kontrol	15,810	21	2,482	4,336	2,021
	Eksperimen	19,048	21	2,355		

The purpose of the post-test mean difference test according to table 4 above is to see which is more effective between the training method applied by the teacher and the training model developed by the researcher in improving water recognition skills. Based on the difference in the post-test mean in the control and experimental groups, it was obtained that t_0 was 4.336 and t_{table} was 2.021 with 40 degrees of freedom and $\alpha = 0.05$. Thus, $t_0 = 4.336 > t_{table} = 2.021$, there is a difference in the final test of water recognition skills for children with intellectual disabilities after practicing the developed exercise model. So that the product of training model development is more effectively used to improve water recognition skills and understanding of students with intellectual disabilities.

DISCUSSION

The purpose of this research is to develop a model of water recognition exercise for children with intellectual disabilities and to see the effectiveness of the developed model. Based on the findings of this study that during the trial, the developed model can be applied to children with intellectual disabilities. A disability who has one of several disability designations (e.g., autism spectrum

disorder, traumatic brain injury) and because of this disability, requires special education (Haegele & Hodge, 2017). There were some inputs during the experimental observation findings, one of which was by dividing several models at each meeting and seeing the advantages of each model. Instructions should also be given directly to students so that they are quicker to accept and practice each model. This is in accordance with research which states that teaching physical education requires direct instruction to students (Goh, 2021). Students can respond well when they see the teacher's example of movement as a valuable experience (Turner & Purkey, 2013).

The researcher emphasized to future trainers that in order to gain a better understanding of the complexities of teaching, greater attention needs to be paid to students and trainers' perceptions of the challenges and barriers to teaching intellectually disabled children. Trainers must be able to teach all materials to acquire pedagogical knowledge and skills that contribute to the effective learning of physical education (Sato et al., 2020). The training focuses on maximizing the potential of students by emphasizing the positive. Its main aim is to provide children with opportunities to develop their psychomotor, cognitive and social skills (Tsangaridou, 2017). Although there are some trainers who consider physical education as an important subject in the school curriculum, they admit that it has been underestimated and seen as a marginal subject in special schools.

A coach must have the ability to respond to individual student performances, the context of the subject matter and classroom atmosphere as well as the overall student interest in a learning activity (Manross & Templeton, 2013). The coach not only responds to these aspects, but also has many alternatives to solve the existing problems. For example, trainers may use different instructional strategies depending on the needs of students or fun-filled practice materials. Trainers must promote themselves to students with disabilities to become teachers who have (i) theoretical pedagogy; (ii) a sense of security; (iii) partnerships for authentic learning; and (iv) student voice and co-design (Alfrey & Jeanes, 2021).

This study also aims to see the attitude of the trainer towards students with disabilities through visual information, and is directed to find out the changes. Students with disabilities in the research group demonstrate how visual information is used to identify their abilities. For this reason, short videos containing learning problems for children with disabilities are allowed to be watched by teachers and students, after being shown, the video training model is applied to the research group. Trainers should also have a more positive attitude towards PwDs because they know more about disabilities and because there is a lot of interaction through education (Fethi, 2015). These skills must develop over time with visual learning through hearing and video for mentally retarded students which is also manifested in future Physical Education teacher candidates.

Swimming coach for intellectually disabled children does require more attitude and attention. The findings of the study revealed that the trainers could not provide the material themselves to the children and needed a companion trainer in delivering the water recognition exercise model. This is due to the diversity of students with disabilities who have different behavior in each student. Disability can be defined as an individual and/or medical phenomenon that results in limited brain function (Fitzgerald & Stride, 2012). This finding is consistent with the theory which states that trainers conceptually have a creative view for collaboration, have knowledge and support (Pocock & Miyahara, 2018). This effort is to support between trainers and students with disabilities, parents and teacher assistants in creating an effective learning environment.

Based on the findings on the effectiveness of the model it was found that there was a significant difference between the control and experimental groups. Water recognition skills in the experimental group were found to have increased for 10 meetings. This is in line with research which states that there are differences in the quality of life and motor skills of children with disabilities who participate in physical education activities and those who do not participate in physical education activities (Davis et al., 2012). When tests of motor skills of mentally retarded children in the experimental group were evaluated, significant improvements were

found in fine motor precision, bilateral coordination, balance and, upper extremity coordination (Özkan & Kale, 2021). Physical education activities make a positive contribution to improving motor skills and quality of life of children with disabilities (Koh, 2018). Physical education programs can move towards an emphasis on inclusive activities that are not based on traditional concepts of physical competence, appearance and ability, but focus on all of the body can develop basic movement skills (Barber, 2018).

CONCLUSION

Water recognition training program strategies and guidelines have been successful in promoting a training environment for children with disabilities. In addition, collaboration and support between coaches and children with intellectual disabilities, parents, and assistant coaches are valued in achieving the goals. The difficulty experienced by the trainer is in implementing a training class/program that is intertwined with various features or student diversity beyond direct control. The discussion that has been made in the research on the development of the water recognition exercise model as a whole states that the product developed is feasible and effective to use. This can be proven from the research findings, which conclude that: the development of water recognition training models for children with intellectual disabilities can be carried out, valid, and practical to be implemented into swimming training programs. Based on the data obtained from the effectiveness test, the developed water recognition exercise model is more effectively used to improve the skills and understanding of water recognition in children with intellectual disabilities.

REFERENCES

- Alfrey, L., & Jeanes, R. (2021). Challenging ableism and the ‘disability as problem’ discourse: how initial teacher education can support the inclusion of students with a disability in physical education. *Sport, Education and Society*. <https://doi.org/10.1080/13573322.2021.2019698>
- American Red Cross. (2017). Water Safety Instructor’s Manual. In *American Red Cross*. <http://cdn1.thprd.org/pdfs2/document2721.pdf>
- Archer, S. (2012). Aquatic exercise and arthritis. *Aquatic Therapy Journal*, 16(1), 29–31. <http://articles.sirc.ca/search.cfm?id=S924680%5Cnhttp://search.ebscohost.com/login.aspx?direct=true&db=s3h&>

- AN=SPHS-924680&site=ehost-live%5Cnhttp://www.aeawave.com/
Armatas, V. (2014). Mental retardation: Definitions, etiology, epidemiology and diagnosis. *Journal of Sport And Health Research*, 1(2), 112–122.
- Barber, W. (2018). Inclusive and accessible physical education: rethinking ability and disability in pre-service teacher education. *Sport, Education and Society*, 23(6), 520–532. <https://doi.org/10.1080/13573322.2016.1269004>
- Borg, W.R. & Gall, M. . (2009). *Educational Research An Introduction*.
- Conatser, P. (2012). *Adapted aquatics swimming screening test*. Retrieved from www.aadaptedaquatics.org
- Conatser, P., & Block, M. E. (2011). Factors that improve aquatic instructors' beliefs toward inclusion. *Therapeutic Recreation Journal*, 35(2), 170–184. <http://search.ebscohost.com/login.aspx?direct=true&db=sph&AN=SPHS-828286&site=ehost-live%5Cnhttp://www.nrpa.org/branches/ntrs.htm>
- Conatser, Phillip. (2007). Adapted Aquatics & Rehabilitation: A Literature Synthesis. *International Journal of Aquatic Research and Education*, 1(3). <https://doi.org/10.25035/ijare.01.03.07>
- Davis, R., Rocco-Dillon, S., Grenier, M., Martinez, D., & Aenchbacker, A. (2012). Implementing Disability Sports in the General Physical Education Curriculum. *Journal of Physical Education, Recreation & Dance*, 83(5), 35–41. <https://doi.org/10.1080/07303084.2012.10598778>
- Devi, L. (2003). Child development. An Introduction. In *Institute for sustainable development, Lucknow*.
- Fethi, A. (2015). Examination of physical education teacher candidates' attitudes towards individuals with physical disability by visual information. *Anthropologist*, 21(1–2), 197–201. <https://doi.org/10.1080/09720073.2015.11891808>
- Fitzgerald, H., & Stride, A. (2012). Stories about PE from young people with disabilities. *International Journal of Disability Development and Education*, 59, 283.
- Fogelman, C. J. (2012). *American Association on Mental Deficiency (AAMD) Adaptive Behavior Scale, revision*.
- Foroutan, M. (2014). Mental retardation (MR) etiology in children referred to care services. *Journal of Patient Safety & Quality Improvement*, 2(4), 165–167.
- Gelinas, J. E., & Reid, G. (2015). The developmental validity of traditional learn-to-swim progressions for children with physical disabilities. *Adapted Physical Activity Quarterly*, 17(3), 269–285. <https://doi.org/10.1123/apaq.17.3.269>
- Goh, T. L. (2021). Closing the Gap: Teaching Physical Education Post-Pandemic. *Journal of Physical Education, Recreation and Dance*, 92(7), 3–4. <https://doi.org/10.1080/07303084.2021.1948264>
- Haegele, J. A., & Hodge, S. (2017). Current Practices and Future Directions in Reporting Disability in School-Based Physical Education Research. *Quest*, 69(1), 113–124. <https://doi.org/10.1080/00336297.2016.1165122>
- Jarvie, G. (2016). Sport, culture and society: An introduction. In *Sport, Culture and Society: An Introduction*. <https://doi.org/10.4324/9780203970003>
- Jensen, M. M., Rasmussen, M. K., & Grønbaek, K. (2014). Design sensitivities for

- interactive sport-training games. *Proceedings of the Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques, DIS*, 685–694. <https://doi.org/10.1145/2598510.2598560>
- Koh, Y. H. (2018). A strategy to improve pre-service teachers' self-efficacy towards inclusive physical education for students with intellectual disability and autism. *International Journal of Inclusive Education*, 22(8), 839–855. <https://doi.org/10.1080/13603116.2017.1412511>
- Kusumaningrum, A. Z., Kristiyanto, A., & Riyadi, S. (2019). The Implementation of Swimming Games Learning for Pre-School Students in Singapore Piaget Academy. *International Journal of Multicultural and Multireligious Understanding*, 6(4), 135. <https://doi.org/10.18415/ijmmu.v6i4.967>
- Lieberman, L., & Wilson, S. (2015). Effects of a Sports Camp Practicum on Attitudes Toward Children With Visual Impairments and Deafblindness. *RE:View: Rehabilitation and Education for Blindness and Visual Impairment*, 36(4), 141–154. <https://doi.org/10.3200/revu.36.4.141-154>
- Manross, D., & Templeton, C. L. (2013). Expertise in Teaching Physical Education. *Journal of Physical Education, Recreation & Dance*, 68(3), 29–35. <https://doi.org/10.1080/07303084.1997.10604908>
- Ortiz-Castillo, E. M., & Hodge, S. R. (2011). Physical Activity Patterns and Factors Influencing Physical Activity Participation among Adolescents with Physical Disabilities in Urban Communities. *ProQuest Dissertations and Theses*, 335. https://search.proquest.com/dissertations-theses/physical-activity-patterns-factors-influencing/docview/919556867/se-2?accountid=14695%0Ahttps://eureka.upo.es/discovery/search?vid=34CBUA_UPO:VU1&lang=es
- Özkan, Z., & Kale, R. (2021). Investigation of the effects of physical education activities on motor skills and quality of life in children with intellectual disability. *International Journal of Developmental Disabilities*. <https://doi.org/10.1080/20473869.2021.1978267>
- Pocock, T., & Miyahara, M. (2018). Inclusion of students with disability in physical education: a qualitative meta-analysis. *International Journal of Inclusive Education*, 22(7), 751–766. <https://doi.org/10.1080/13603116.2017.1412508>
- Polson, T. (2013). Effects of goal setting on performance in collegiate athletes. *Skyline - The Big Sky Undergraduate Journal*, 1(1), 1–27.
- Preist, L. (2013). *Adapted aquatics: swimming for persons with physical and mental impairments*.
- Rainer Weber. (2015). *Liver-Related Deaths in Persons Infected With the Human Immunodeficiency Virus The D:A:D Study*. 166, 1632–1641. <http://archinte.jamanetwork.com/>
- Riyanto, P. (2016). Pengaruh pemanfaatan ilmu teknologi (audio visual) Terhadap motivasi belajar pendidikan jasmani di SMP Negeri 1 Panjalu. *Biormatika: Jurnal Ilmiah Fakultas Keguruan Dan* <http://ejournal.unsub.ac.id/index.php/FKIP/article/view/150%0Ahttp://ejournal.unsub.ac.id/index.php/FKIP/article/download/150/135>
- Sato, T., Ellison, D. W., & Eckert, K. (2020). Japanese elementary teachers'

- development experiences in relation to teaching physical education. *Education 3-13*, 48(2), 147–162. <https://doi.org/10.1080/03004279.2019.1597912>
- Sato, T., Hodge, S. R., Casebolt, K., & Samalot-Rivera, A. (2015). Physical Education Teacher Candidates' Beliefs About Instructing Students With Disabilities in Adapted Aquatics. *International Journal of Aquatic Research and Education*, 9(3). <https://doi.org/10.25035/ijare.09.03.07>
- Silverstein, B. J., Olvera, D. R., & Schalock, R. (2011). Allocating direct-care resources for treatment of maladaptive behavior: The staff intensity scale. *Mental Retardation*, 25(2), 91–100.
- Tsangaridou, N. (2017). Early childhood teachers' views about teaching physical education: challenges and recommendations. *Physical Education and Sport Pedagogy*, 22(3), 283–300. <https://doi.org/10.1080/17408989.2016.1192593>
- Turner, R. B., & Purkey, W. W. (2013). Teaching Physical Education: An Invitational Approach. *Journal of Physical Education, Recreation & Dance*, 54(7), 13–64. <https://doi.org/10.1080/07303084.1983.10630480>
- Wykle, M. O. (2013). Safety first: aquatic practice is growing, but therapy pools and practioners have not had guidelines and safety standards. Until now. *Rehab Management: The Interdisciplinary Journal of Rehabilitation*, 16(6), 24-27;50.
<http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=SPHS-973112&lang=es&site=ehost-live%0Ahttp://articles.sirc.ca/search.cfm?id=S-973112%0Ahttp://www.curantcommunications.com%0Ahttp://articles.sirc.ca/search.cfm?id=S-973112>
- Zhu, W., & Erbaugh, S. J. (2015). Assessing Change in Swimming Skills Using the Hierarchical Linear Model. *Measurement in Physical Education and Exercise Science*, 1(3), 179–201. https://doi.org/10.1207/s15327841mpee0103_3