

DOI: <https://doi.org/10.54702/qvp6ar98>**The effect of suggested rehabilitation exercises on improving balance for infection with spastic cerebral palsy aged (6-8) years**Saja Bassem Hashem <sup>(1)</sup> ✉, Suaad Abid Hussein <sup>(2)</sup> ✉

1&amp;2 Physical Education and Sport Sciences College for Women/ University of Baghdad

**Received: 17/01/2024, Accepted: 14/02/2024, Published: 30/04/2024**This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).. © Modern Sport**Abstract**

Difficulty in movement affects children's ability to maintain their balance, and since balance plays a major role in improving daily life abilities and developing children's kinetic skills, the importance of using rehabilitative exercises that help them balance and overcome their difficulty in movement has become clear. There is increased interest in this special category of children with simple spastic cerebral palsy (ages 6-8) because these exercises are beneficial to them, as these exercises develop the child's kinetic skills, maintain his balance, and achieve significant development in his kinetic abilities. The problem of the research highlights that the importance of rehabilitation after the injury is the return of the injured person to the normal state before the injury. The two researchers looked at the issue of people with simple spastic cerebral palsy for ages (6-8) years for children and identified the children's difficulties in maintaining balance and the impact of this on their daily lives. Therefore, the two researchers decided Using prepared and useful rehabilitation exercises to improve balance skills effectively. The research aimed to prepare balance exercises to rehabilitate people with simple spastic cerebral palsy for ages (6-8 years). The sample number was (5) males with disabilities present at the Al-Saada Institute for Physical Disabilities. The two researchers concluded the positive effect of the prepared exercises in improving balance for the research sample. The researchers concluded that applying exercises according to the principle of gradation from easy to difficult and increasing repetitions had an effective impact in improving balance among the research sample. The researchers recommend the need to pay attention to the segment of children with mild spastic cerebral palsy by using rehabilitative exercises to improve their kinetic abilities.

**Keywords****balance exercises - simple spastic cerebral palsy****introduction:**

(Ali Jalal al-Din) "Rehabilitation is the main focus in the treatment of many injuries because it aims to eliminate cases of dysfunction of the affected part and reach the maximum level of its normal condition and leads to restoring the ability to feel movement of the injured part" (5) There are many methods of rehabilitation for people with cerebral palsy. Some of them are still in the early stages of development, and behavioral performance is likely to improve in any area, such as sensory, cognitive and kinetic function, when the kinetic activity is repetitive and limited to a specific task. (Majid) points out, "Cerebral palsy is one of the diseases that afflict children, and it is a term given

to the condition of a child who is exposed to an accidental natural brain injury due to incomplete growth or damage to the cells of the areas responsible for movement, knowledge of posture, and balance, during his normal stage of development" (7). There are five types of spastic cerebral palsy, one of which is simple spastic cerebral palsy, with the incidence rate ranging from 50-60%. (Iman and Ahmed) define it as "paralysis that occurs as a result of brain damage or distortion of the brain cells responsible for movement, which leads to complete paralysis or lack of coordination of movement between the two parts of the body" (2). Difficulty in movement affects children's ability to maintain their balance,

and since balance plays a major role in improving daily life abilities, such as walking in a balanced manner and developing children's kinetic skills, the importance of using rehabilitative exercises that help them with balance and overcome their difficulty in movement became clear. Therefore, increased attention must be given to this special category of children with simple spastic cerebral palsy because these exercises are beneficial to them, as these exercises develop the child's kinetic skills, maintain their balance, and achieve great development in their kinetic abilities. The problem of the research highlights that the importance of rehabilitation after injury is the return of the injured person to the normal state before the injury. The two researchers considered using prepared and useful rehabilitation exercises to improve the skills of maintaining balance effectively. The problem was summarized in answering the following question: Do these exercises have a role in rehabilitating people with simple spastic cerebral palsy? The aim of the research was to prepare balance exercises to rehabilitate people with simple spastic cerebral palsy for males aged (6-8) years. In addition, to identify the effect of balance exercises to rehabilitate people with cerebral palsy. Simple spastic cerebral palsy for ages (6-8) years. The

researchers hypothesized that there were statistically significant differences between the pre- and post-tests in the experimental research sample. The field of research included. The human field: a sample of people with simple spastic cerebral palsy for males for ages (6-8) years. The time field: (9/29/2023) until (11/29/2023) and the spatial field: the rehabilitation treatment hall at the Al-Saada Institute, located on Palestine Street / Baghdad.

### **Method and procedures:**

The two researchers chose the experimental method because it was suitable for solving the research problem. Marwan defines the experimental method as "the nature of the problem dictates the method that can be used" (8). Determining the sample is one of the important matters that must be taken into account in faithfully representing society. The researcher is the one who chooses the appropriate sample for his research, as the total sample number was intentionally (5). The two researchers will take people with spastic cerebral palsy at the Al-Saada Institute for Physical Disability in Baghdad. The two researchers homogenized the sample in terms of the variables of height, weight, age, and severity of injury, to begin with a single starting line for work.

**Table .1** Homogeneity of the sample in variables (height, weight, age, severity of injury)

Variables	Measuring unit	Mean	Std. Deviations	Median	Skewness
Chronological age	year	7.75	1.18	8	0.421
Age of injury	day	20,33	7,20	20	0,421
Severity of injury	All members of the sample were children with simple spastic cerebral palsy				

### **Devices and tools:**

Arab and foreign sources - the Internet, personal interviews, a medical scale, a Sony camera, a measuring tape, and 5 rubber balls.

### **Tests**

The two researchers chose the appropriate tests for the research sample after approval by the experts, and they were as follows:

#### **First: balance test:**

Stand still

Calculation: Calculates the time to stand still.

#### **Second: Sitting on a large ball test**

Calculation: The time is calculated by keeping the injured person still on the ball

### **Third: Walking 5 meters between two lines**

Calculation: Calculates the number of correct steps without deviating from the two lines

The two researchers conducted an exploratory experiment on 29/9/2023, in the physical therapy hall.

The two researchers conducted the pre-tests on (1/10/2023) at (10 am) in the rehabilitation treatment hall at the Al-Sa'ada Institute in Baghdad.

### **Main experience:**

The main experiment was conducted on the research sample by applying qualifying exercises

according to gradual repetitions, starting from easy to difficult. The exercises were in the first units of stability, then the exercises begin with difficulty in terms of changing walking directions with balanced steps so that they are in the right and left directions, forward and backwards, and using exercises on the ball, which It helps to improve balance in patients. The post-tests were

conducted on (15/12/2023) at 10 am in the hall of the Al-Saada Institute for Physical Disabilities in Baghdad, under the same conditions in which the pre-tests were conducted, and statistical methods (spss) were used.

### **Results:**

**Table .2** Shows the arithmetic means, standard deviations, calculated T-value, error level, and significance for the two tests (pre-post)

No.	Variables	Measuring unit	Pre-test		Post-test		T value Calculated	Level sig	Type sig
			Mean	Std. Deviations	Mean	Std. Deviations			
1	Stand still	Time/second	75.33	18.04	120.2	45.6	4.119	0.001	Sig
2	Sitting on a ball	Time/second	32.11	5.39	45.24	8.64	4.301	0.011	Sig
3	Walk 5m	Count	11.56	1.43	16.29	3.17	3.982	0.000	Sig

### **Discussion:**

It is evident from Table (2), which shows the arithmetic means, standard deviations, calculated T-value, and error level for the pre- and post-tests of the experimental group in the balance test for the research sample, where the differences appeared significant, and the two researchers attribute the exercises designed by the two researchers and applied to the members of the research sample, which included walking in steps. It was balanced after several rehabilitation units were applied to the sample members. The role of rehabilitation exercises was not limited to providing balance, but rather the variety in using exercises helped stimulate the nerves working on the joints, and this was confirmed by (Ali) (Kinetic exercises for injured children are an important means for their correct growth, as through them the muscles are strengthened. Maintaining balance, increasing the flexibility of ligaments and joints, and improving the functional efficiency of the body's systems, which is reflected in the health condition of the body (4), this was confirmed by (Basma and Suaad): "Rehabilitation is the process of renewing health and ability to work through various means, whereby we can obtain the maximum physical, psychological, and social possibility of recovery"

(10). The two researchers confirmed that walking while holding the existing supports helped balance the movement correctly, and the rubber ball exercises by raising and lowering it helped correct the body's joints, and this was confirmed by (Samia) (the exercises also corrected and improved the angles of the body's joints during the walking stages) (3). This was proven by the results of the experimental group's post-tests in the straight-line walking test, and this is what (Adel) indicated: "Kinetic exercises for disabled children are an important means for their correct development. Through them, the muscles are strengthened, balance is maintained, the flexibility of the ligaments and joints is increased, and the functional adequacy of the body's systems is improved, in a way that reflects On the health condition of the body" (6). Balancing a person with cerebral palsy on a ball improves the child's balance, strengthens the torso muscles, and improves stability. The reason for the proposed exercises and performing the repetitions in a gradual manner with regularity in performing balance exercises leads to the emergence of significant results within the curriculum exercises. This was confirmed by (Osama) (that rehabilitation exercises are one of the important components For physical therapy that helps

restore physical fitness, such as strength, neuromuscular coordination, skill, flexibility, and regaining one's efficiency and general fitness in life (1). (Riham & Abeer) pointed out that "it is necessary for physical therapy centers to pay attention to developing the expertise of the therapists working in them on how to apply rehabilitative exercises" (9).

### **Conclusions:**

The researchers reached through the statistical results of the research variables

- Applying exercises according to the principle of gradation from easy to difficult and increasing repetitions had an effective impact in improving balance among the research sample.
- Prepared rehabilitation exercises have a positive effect in improving balance tests (standing, sitting on the ball, and walking in a straight line).

### **Recommendations:**

- Pay attention to rehabilitative exercises that aim to improve balance because they have an effective role
- Holding educational courses or seminars by therapeutic sports specialists in physical therapy centers, through which they explain the extent of the overlap occurring in the medical and sports fields and how to use sports as treatment or prevention.
- The two researchers achieved interest in the segment of children with cerebral palsy by using standardized movement programs to improve their kinetic abilities.
- Accrediting graduates of colleges of physical education who hold advanced degrees in kinetic rehabilitation and integrating them with therapists in physical therapy centers.

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**Appendix (1)****Rehabilitation program****A model of a rehabilitation unit****Purpose of the unit: improving balance****Today: Sunday****Date:( )****Unit:**

No.	Exercise	Time to perform the exercise	Repetition	Rest between repetitions	Sets	Rest between sets	total
1	Walk within the field for a distance of 3m	3minute	2	2minute	2	3minute	22minute
2	Walking inside the field, every step right and left, the injured person stands by leaning on the handles and descending, unfortunately, it is almost squatting	3 minute	2	2minute	2	3minute	22minute
3	Walk inside the field 5 steps right and left without leaning on the handle, then walk one step without leaning	3minute	2	2minute	2	3minute	22minute
4	Stand in the field for 1 minute and then walk to the end of the field	3minute	2	2minute	2	3minute	22minute
5	Walk in the field for 3 steps, then stand for a minute, then walk to the end	3 minute	2	2minute	2	3minute	22minute

## تأثير تمارين تأهيلية مقترحة في تحسين التوازن للمصابين بالشلل الدماغي التشنجي بأعمار (8-6) سنوات

سجى باسم هاشم 1 ، سعاد عبد حسين 2  
2&1 جامعة بغداد / كلية التربية البدنية و علوم الرياضة للبنات

التأهيل  
المصاحب

ان الصعوبة في الحركة تؤثر على قدرة الأطفال في الحفاظ على توازنهم وبما ان التوازن يلعب دور كبير في تحسين قدرات الحياة اليومية وتنمية المهارات الحركية للأطفال لذلك اتضحت الأهمية في استخدام تمارين تأهيلية تساعد على التوازن والتغلب على صعوبة الحركة لديهم فيزداد الاهتمام بهذه الفئة الخاصة من الاطفال المصابين بالشلل الدماغي التشنجي البسيط للاعمار (8-6) سنوات وذلك لما في هذه التمارين فائدة لهم حيث تعمل هذه التمارين على تنمية المهارات الحركية للطفل والمحافظة على توازنه وتحقيق تطور كبير في القابليات الحركية له. وتبرز مشكلة البحث كون اهمية التأهيل بعد الاصابة هي عودة المصاب الى الحالة الطبيعية الى ما قبل الاصابة و نظرت الباحثتان في موضوع المصابين بالشلل الدماغي التشنجي البسيط للاعمار (8-6) سنة للاطفال وتحديد صعوبات الاطفال في الحفاظ على التوازن وتأثير ذلك على حياتهم اليومية لذلك ارتأت الباحثتان في استخدام تمارين تأهيلية معدة ومفيدة لتحسين مهارات الحفاظ على التوازن وبشكل فعال. وهدف البحث الى اعداد تمارين توازن لتأهيل للمصابين بالشلل الدماغي التشنجي البسيط للاعمار(8-6)سنوات وكان عدد العينة (5) من الذكور المصابين الموجودين في معهد السعادة للعوق الفيزيائي واستنتجت الباحثتان بالتأثير الايجابي للتمارين المعدة في تحسين التوازن لعينة البحث. واستنتجت الباحثتان -ان تطبيق التمارين بمبدأ التدرج من السهل الى الصعب وزيادة التكرارات كان لها الاثر الفعال في تحسين التوازن لدى عينة البحث . وتوصي الباحثتان بضرورة الاهتمام بشريحة المصابين بالشلل الدماغي التشنجي البسيط للاطفال باستخدام تمارين تأهيلية لتحسين قابلياتهم الحركية.

تمارين التوازن ، الشلل الدماغي التشنجي البسيط

الكلمات المفتاحية