

Implications: The findings of this study suggest that performance in the medial direction of the UQYBT may be a valid indicator for distinguishing swimmers with and without shoulder pain, reinforcing its potential as a functional assessment tool for athletes in this sport. However, the superolateral and inferolateral directions may not be sensitive enough to detect performance deficits associated with shoulder pain.

Keywords: Physical Performance Test, Functional Test, Measurement Properties

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: CAAE: 4.106.335/2020 e 3.741.115/2019.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101335>

73

DETERMINING KNOWN-GROUP VALIDITY OF THE UPPER LIMB ROTATION TEST IN SWIMMERS ASYMPTOMATIC AND WITH SHOULDER PAIN

Danyelle Leite Furtado de Araújo, Gabriel Alves Dos Santos, Matheus Lemos Dos Santos, Bruna Gabriella Nascimento Bezerra, Mayara Ribeiro Da Silva, Marlison Douglas Nascimento Silva, Valéria Mayaly Alves de Oliveira, Danilo Harudy Kamonseki
Departamento de Fisioterapia, Universidade Federal da Paraíba (UFPB), João Pessoa, PB, Brazil

Background: Swimmers frequently experience upper limb injuries, with shoulder pain being one of the most common, negatively affecting their athletic performance. Functional tests, such as the Upper Limb Rotation Test (ULRT), are widely used in clinical practice to assess these athletes. However, there is still no evidence to support the ULRT's ability to differentiate between asymptomatic swimmers and those with shoulder pain. Therefore, it is essential to investigate the known-group validity of the ULRT in this population.

Objectives: To evaluate the known-group validity of the Upper Limb Rotation Test in swimmers asymptomatic and with shoulder pain.

Methods: This is a cross-sectional study that includes swimmers of both sexes, aged between 12 and 60 years, with at least 1 year of competitive practice, and a minimum of two training sessions per week. This study was approved by Ethics Research Committee. The ULRT was performed with the swimmers in a modified flexion position (on their elbows), close to a wall. They performed trunk rotation and external shoulder rotation at 90° of abduction and external rotation, touching a tape on the wall as quickly as possible for 15 seconds. The athletes performed three trials, and the mean was considered for the analysis. The Shapiro-Wilk test was used to assess the normality of distributions for continuous data, which presented normal distribution. For the known group validity, the ULRT score of the asymptomatic group and those with shoulder pain was compared using an independent samples t-test. The data were analyzed with SPSS software version 23.0.

Results: A total of 50 athletes participated in the study, with 29 (58%) from the asymptomatic group and 21 (42%) from the group with shoulder pain, with a mean age of 30.46 ± 14.27 years, and 27 (54%) were male. For the validity of known groups, there was no statistically significant difference between the asymptomatic group and the group with pain (mean difference: 2.72, 95% CI: -5.87, 0.42, $p = 0.08$).

Conclusion: The results of this study indicate that the ULRT is unable to differentiate swimmers with shoulder pain from asymptomatic swimmers.

Implications: These findings can assist clinicians in the assessment and management of shoulder pain in swimmers, guiding the selection of more effective assessment tools to identify functional restrictions associated with shoulder pain in this population.

Keywords: Physical Performance Test, Functional Test, Measurement Properties

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: CAAE: 82278824.8.0000.0017.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101336>

74

CORRELATION BETWEEN LUMBOPELVIC STABILITY TEST AND ENDURANCE TESTS OF THE TRUNK IN SWIMMERS

Matheus Lemos Dos Santos, Gabriel Alves Dos Santos, Raquel Lins de Sousa Lima, Bruna Gabriella Nascimento Bezerra, Mayara Ribeiro Da Silva, Marlison Douglas Nascimento Silva, Valéria Mayaly Alves de Oliveira, Danilo Harudy Kamonseki
Graduando em Fisioterapia, Departamento de Fisioterapia, Universidade Federal da Paraíba (UFPB), João Pessoa, PB, Brazil

Background: The pelvic drop can indicate a sign of muscle weakness during the lumbopelvic stability test. The integrity of this region ensures the proper transfer of energy to the distal segments for the body's kinematics and biomechanics, such as muscle strength, which is an important component of the kinetic chain. In swimming athletes, it is not yet clear which factors may be related to the injuries and pain they experience, making it necessary to understand if there is any correlation between the lumbopelvic stability test and trunk muscle endurance due to the scarcity of studies.

Objectives: To assess the correlation between the lumbopelvic stability test and endurance tests of the trunk in swimmers.

Methods: This was a cross-sectional observational study approved by the research ethics committee. The inclusion criteria were swimmers athletes of both sex, age between 18 and 60 years old, with competitive practice in the past one year, and regular training for at least twice a week. Lumbopelvic stability was assessed using the one-legged bridge test with spherical markers on the anterior superior iliac spines, where the pelvic tilt (in degrees) was observed and recorded. Two-dimensional analyses were conducted using the Kinovea 0.9.5 software (Kinovea Open Source Project) for Windows®. Additionally, muscle endurance of the trunk flexors (front plank), extensors (Biering-Sorenson test), and lateral flexors (side plank) was assessed by having the individual maintain a pre-established ideal posture for each muscle group for as long as possible. Pearson coefficient correlation was used to assess the association between the lumbopelvic stability test and endurance tests, which was classified as weak (0–0.39), moderate (0.40–0.69), and strong (0.70–1.00). Data analysis was performed using SPSS Inc, Chicago, IL version 23.0.

Results: A total of 27 athletes participated in the study, with mean age of 32.78 ± 14.64 , 6.96 ± 6.05 years of sports practice, and 15 (56 %) were men. The results of the lumbopelvic stability test showed a weak negative correlation for the endurance of the flexor muscles (front plank) ($r = -0.233$), right lateral flexors (side plank) ($r = -0.217$), left lateral flexors (side plank) ($r = -0.003$), and a weak positive correlation for the trunk extensor muscles (Biering-Sorenson test) ($r = 0.109$).

Conclusion: The lumbopelvic stability test has a weak negative correlation for the endurance of the flexor muscles, lateral flexors, and

a weak positive correlation for the trunk extensor muscles in swimming athletes.

Implications: The study suggests that endurance does not influence pelvic tilt during the lumbopelvic stability test in swimming athletes, and therefore, it is important to investigate and evaluate other factors that may actually influence instability in this region.

Keywords: Kinetic chain, risk factors, athletes

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: CAAE: 81153324.4.0000.0121.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101337>

75

RELIABILITY, STANDARD ERROR OF MEASUREMENT, AND MINIMAL DETECTABLE CHANGE OF THE UPPER QUARTER Y TEST IN SWIMMING ATHLETES

Gabriel Alves Dos Santos, Danyelle Leite Furtado de Araújo, Matheus Lemos Dos Santos, Bruna Gabriella Nascimento Bezerra, Mayara Ribeiro Da Silva, Marlison Douglas Nascimento Silva, Valéria Mayaly Alves de Oliveira, Danilo Harudy Kamonseki
Departamento de Fisioterapia, Universidade Federal da Paraíba (UFPB), João Pessoa, PB, Brazil

Background: Physical performance tests are commonly applied in sports injury prevention and rehabilitation to measure abilities linked to athletic demands, including muscle strength, explosive power, and agility. These assessments offer insight into an athlete's functional capacity. The Upper Quarter Y Test (UQYBT) has been widely used for assessment of athletes. However, there is limited information on its reliability in swimmers.

Objectives: To assess the reliability, standard error of measurement (SEM), and minimal detectable change (MDC) of the UQYBT in swimmers.

Methods: This is a cross-sectional study. This study was approved by Ethics Research Committee. Swimmers of both sexes, aged 12 to 60 years, with at least one year of competitive experience and a minimum of two training sessions per week were eligible. Two assessments were conducted with an average interval of 10.37 ± 3.15 days between them. Three ground lines were marked: medial, superolateral, and inferolateral. With one hand on the center mark, the individual reached with the free limb three times per direction. The mean, normalized by limb length, and the composite score were analyzed. The reliability of the UQYBT was assessed using the Intraclass Correlation Coefficient (ICC 3.3), Standard Error of Measurement, and 95% Minimal Detectable Change. The ICC was classified as excellent ($ICC > 0.90$), good (0.75-0.90), moderate (0.50-0.75) and poor ($ICC < 0.50$). Data analysis was performed using the Statistical Package for the Social Sciences, version 23.0 (SPSS Inc, Chicago, IL).

Results: A total of 51 athletes participated in the study. The non-normalized UQYBT for the dominant side demonstrated good reliability across all three directions, with ICC values ranging from 0.80 to 0.84. The SEM ranged from 4.11 to 6.28, while the MDC ranged from 11.41 to 17.42. For the normalized scores, reliability ranged from moderate to good, with ICC values of 0.68 for medial ($SEM = 6.12$, $MDC = 16.97$), 0.82 for superolateral ($SEM = 4.80$, $MDC = 13.31$), and 0.72 for inferolateral ($SEM = 7.43$, $MDC = 20.61$). The composite score for the dominant side also showed good reliability ($ICC = 0.82$, $SEM = 3.73$, $MDC = 10.34$). On the non-dominant side, the non-normalized score of all three directions demonstrated good reliability, with ICC values ranging from 0.86 to 0.89, SEM from

3.66 to 5.65, and MDC from 10.17 to 12.76. For the normalized scores, reliability ranged from moderate to good, with ICC values of 0.70 for medial ($SEM = 5.65$, $MDC = 15.66$), 0.87 for superolateral ($SEM = 4.43$, $MDC = 12.30$), and 0.80 for inferolateral ($SEM = 6.06$, $MDC = 16.80$). The composite score for the non-dominant side demonstrated good reliability ($ICC = 0.86$, $SEM = 3.61$, $MDC = 10.02$).

Conclusion: The UQYBT demonstrated moderate to good reliability for assessing swimmers. The SEM and MDC values were provided to help clinicians interpret the test results.

Implications: Clinicians can use the UQYBT for assessing swimmers, considering the moderate to good reliability. In addition, clinicians should consider the SEM and MDC for interpreting the results of UQYBT.

Keywords: Physical Performance Test, Functional Test, Measurement Properties

Conflict of interest: The authors declare no conflict of interest.

Funding: Empresa Brasileira de Serviços Hospitalares (Ebserh).

Ethics committee approval: No. 6.669.065.

Registration: Not applicable.

<https://doi.org/10.1016/j.bjpt.2025.101338>

76

INCIDENCE OF INJURIES IN RECREATIONAL BEACH TENNIS PLAYERS AND ITS ASSOCIATION WITH TRAINING VOLUME

Maria Vitória Ribeiro Machado, Luiz Carlos Gomes da Silva, Karla Geandra Dantas de Sousa, Júlia Nelúbia Jerônimo Da Silva, Iarley Webster Mareco Almeida, Yago Tavares
Centro Universitário Santa Maria, Cajazeiras, PB, Brazil

Background: Beach tennis (BT) is a sport that has become popular in Brazil, and its unrestricted and unsupervised practice has often been associated with the occurrence of injuries. However, this belief is based on empirical knowledge, without any scientific basis.

Therefore, the lack of evidence regarding the incidence of injuries in BT, as well as its relationship with training volume, can hinder decision-making regarding injury prevention strategies in this sport.

Objectives: To analyze the incidence of injuries in BT practitioners and its association with training volume.

Methods: This is a cross-sectional study that included 120 individuals who practiced BT regularly and recreationally in the last six months, with a minimum frequency of once a week. Recreational practitioners were considered those who were non-competitors or who competed only in local competitions. The dependent variable of this study was the incidence of injuries, defined as the rate of injuries per 1,000 hours of BT practice. The independent variables included the weekly frequency and number of hours per day of training, in addition to pre-training warm-ups and practice of other sports. Participants were recruited through invitations via social media and direct contact with potential participants at sports clubs. Data collection was based on an online survey that contained data on personal information, occurrence of injuries, and characteristics of BT practice. Injury incidence was calculated using the following formula: (Number of injuries/Number of hours of exposure) x 1000. The association between injury occurrence and variables related to training volume was analyzed using the Chi-square test. All analyses considered a 95% confidence interval and a significance level of 5%.

Results: A total of 166 injuries were documented in 96 practitioners (80% of the sample), after 53,232 hours of play, which generated an injury incidence rate of 3.11 injuries per 1,000 hours of BT play. Bivariate analysis indicated that variables related to the volume of BT practice, such as weekly frequency ($p = 0.83$; effect size = 0.10) and daily hours of practice ($p = 0.99$; effect size = 0.10), warm-up