An Educational Module for Pavlik Harness Application for Developmental Dysplasia of the Hip: Study in a Greek Population

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Summary: Introduction: The success of Pavlik harness therapy is based, among other things, upon the correct reapplication by parents. This prospective study assesses the effectiveness of a validated Objective Structured Assessment of Technical Skill (OSATS) educational module for Pavlik harness application among Greek parents.

Methods: Forty consecutive parents of newborns with developmental dysplasia of the hip (DDH), who were treated with Pavlik harness, were divided into two groups. Twenty parents (group 1) were educated with the Greek OSATS version, while the rest (group 2) served as the control. The OSATS score, quality of the final product (Global Rating Scale - GRS) and sonographic imaging of the hips were evaluated during follow-up.

Results: Post-intervention evaluation revealed significant higher means of OSATS score (p<0.01), GRS of performance (p<0.05) and GRS of final product (p<0.05) for group 1. At every retention time point, OSATS was significantly higher for group 1, however there were no significant differences between either GRS score between groups. There was no significant difference in radiographic evaluation and successful outcome.

Conclusions: This educative module increased the parents’ skill level on application of Pavlik harness. However, this module revealed no significant effect in clinical and radiological evaluation of the hips, in this population.

Keywords pediatric orthopedics, developmental dysplasia of the hip, DDH, pavlik harness, simulated learning, parent education

INTRODUCTION

Developmental dysplasia of the hip (DDH) includes a wide spectrum of clinical and imaging findings, ranging from mild instability of the hip joint, as well as developmental variations to dislocation [1,2]. Its definition, even nowadays, is not entirely agreed upon. The term most commonly refers to patients born with dysplasia or instability of the hip, which may lead to hip dislocation. More broadly, DDH is defined as abnormal growth of the hip. Abnormal development of the hip joint encompasses osseous structures, such as the acetabulum and proximal femur, as well as the soft tissues, such as the labrum and capsule. More specific terms have been used in order to describe aspects of this clinical entity, such as subluxation, dislocation, instability and teratologic dislocation of the hip [3].

The frequency of DDH is reported to be approximately 1/1000 newborns. During infancy DDH remains asymptomatic. Screening of newborns has been established as standard neonatal medical act for more than seven decades. It involves universal neonatal clinical examination (Ortolani and Barlow maneuvers) with the addition of sonographic imaging of the

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Abbreviations: ANOVA, analysis of variance; DDH, developmental dysplasia of the hip; GRS, global rating scale; OSATS, Objective Structured Assessment of Technical Skill; SD, standard deviation.
hip joint [3,4]. Hip ultrasonography provides early detection of DDH by visualizing the osseous, as well as the cartilaginous parts of the hip joint. Graf was the first to describe the ultrasonography of newborns’ hips for the early detection of DDH in the early 1980s [5]. According to Graf, bony roof (alpha) angle mainly determines the hip type. Cartilaginous roof (beta) angle, age of the patient and the course of the perichondrium are additional determining issues of ultrasonographic hip typing [5].

The achievement of concentric reduction and as a result normal development of proximal femur and acetabulum, as soon as possible, represents the main goal of DDH treatment [4]. Pavlik introduced a “harness with stirrups” device in the 1940s, as a functional treatment of DDH, since active movement while hips and knees were kept in flexion and the hips also in abduction results in spontaneous and painless repositioning and centralization of the femoral head in the hip joint [4,6,7].

The Pavlik harness, since its introduction, has been widely used as a first-line treatment in newborns <6 months with DDH. Successful outcomes are based upon the correct application and reapplication of the device [8]. Parents are usually responsible for removing and reapplying the Pavlik harness, for everyday bathing and harness weaning. It seems, therefore, to be of paramount importance to educate parents on reapplication of the harness. In 2015, twenty five steps, through international consensus, were established in a validated objective structured assessment of technical skill (OSATS) for the application of the Pavlik harness (Figure 1) [9]. OSATS has been used among health care personnel, while very few studies exist regarding parents’ assessment [8].

The present prospective study represents the first attempt in Greece to assess whether a Greek language OSATS for the application of the Pavlik harness had an effect on the skill levels of parents regarding reaplication of the device, as well as the outcome of DDH.

MATERIAL AND METHODS

The translation of the OSATS checklist in Greek was performed according to the translation protocol guidelines of Beaton et al [10]. Two Greek speaking expert Orthopaedic Surgeons with excellent knowledge of English translated the OSATS into Greek. Two new checklists were made: OSATS- GR no 1 and OSATS- GR no 2. The translators compared these two and combined them into one checklist: OSATS- GR no1,2. The final checklist was translated back to English and was compared by a committee, comprised from the two translators, one statistician and one English language professor, to the original checklist. The committee did not find any differences between the two checklists. The final translation was approved and named OSATS- GR.

A total of 40 consecutive parents without any experience in applying a Pavlik harness were enrolled in this prospective randomized study at Athens General Children’s Hospital “Pan. & Aglaia Kyriakou”. All parents were shown by an expert Orthopaedic Surgeon how to apply the device using a doll. At that point two content experts used the OSATS- GR and a global rating scale (GRS) for the assessment of performance and final product, which are specific to Pavlik harness application (baseline testing).

The study population was then divided randomly into two groups (1 and 2; 20 participants each). Group 1 was presented the instructional video by Moktar J et al [11] and the OSATS- GR was analyzed. Group 2, serving as control, was not given any additional training. After 1 hour the two groups were re-assessed with the OSATS- GR and GRS. The video and the OSATS- GR were given to the group 1 (post-intervention).

Follow-ups were performed at 1, 2 and 4-months after the Pavlik harness application. At the 1 and 2 months follow-up the infants were examined with sonographic imaging and the parents were assessed with the OSATS- GR, while at the 4-month follow-up infants were examined with X-rays and the parents’ assessment with the OSATS- GR.

Parents could remove and reapply the Pavlik harness only after 4 weeks of initial treatment, while all infants were 6 to 8 weeks old at the beginning of treatment. Treatment lasted 4 months.

General Children’s Hospital “Pan. & Aglaia Kyriakou” is a 600-bed general hospital covering mainly urban and suburban pediatric population of Athens, the capital of Greece.

Statistical analysis of skill acquisition and sonographic outcomes were conducted using t tests and analysis of variance (ANOVA).

The present study was approved by the hospital’s bioethics and scientific committee, and informed written consent was received from all participants.

RESULTS

All 40 infants had unilateral DDH, and were graded as Graf type IIc (32 hips) and type III (8 hips) at the initial sonographic evaluation.
**OSATS: Application of a Pavlik Harness**

*Instructions to Candidates: The patient has been diagnosed with DDH.*
*Apply a Pavlik Harness.*

| ITEM | Not done/Incorrect | Done/Correct |
|------|--------------------|-------------|
| **Application Set up:**  |
| 1. The baby should be undressed. A diaper/nappy and a single thin layer body garment can remain. | 0 | 1 |
| 2. The correct size harness should be chosen. While not essential, the baby’s chest circumference can be measured at the nipple line using a tape measure as a guide. | 0 | 1 |
| 3. If the baby is on the border of 2 sizes of harnesses, the larger size should be chosen. | 0 | 1 |
| **Halter, Chest and Shoulder Straps:**  |
| 4. The straps on the harness halter should be opened. | 0 | 1 |
| 5. The opened harness halter should be placed on the bed, front side facing up. | 0 | 1 |
| 6. The baby should be placed supine on top of the halter. | 0 | 1 |
| 7. The chest strap should be brought around the chest and secured at the nipple line. | 0 | 1 |
| 8. The chest strap should be checked by being able to comfortably insert two fingers inside the strap. | 0 | 1 |
| 9. The shoulder straps should be checked to cross posteriorly, then brought over the shoulders and threaded through the buckles on the chest strap. | 0 | 1 |
| 10. The shoulder straps should be secured to keep the chest strap at the level of the nipple line around the entire chest wall. | 0 | 1 |
| **Stirrups, Anterior and Posterior Straps:**  |
| 11. The foot stirrup straps should be opened. | 0 | 1 |
| 12. The foot stirrups should be applied to the correct foot. | 0 | 1 |
| 13. The foot stirrup straps should be secured around the lower leg. | 0 | 1 |

| 14. Each foot needs to be held in the foot piece/arch support using the provided sock or a soft shoe. | 0 | 1 |
| 15. The anterior (hip flexion) straps should be pulled through the correct buckle on each side. | 0 | 1 |
| 16. The line of pull of the anterior straps should follow the anterior axillary line on each side. | 0 | 1 |
| 17. The right and left anterior straps should be adjusted and secured with the hips in 90° to 110° of flexion. | 0 | 1 |
| 18. The posterior (adduction limiting) straps should be pulled through the correct buckle on each side. | 0 | 1 |
| 19. The posterior straps should be adjusted and secured to allow for abduction by gravity (not forced abduction). | 0 | 1 |
| 20. The posterior straps should be adjusted to restrict hip adduction beyond neutral. | 0 | 1 |
| 21. The final position of each hip is re-checked once all straps are secured. | 0 | 1 |

**For Future Reapplication:**

| 22. The anterior (hip flexion) straps are marked or taped where they have been secured for reapplication. | 0 | 1 |
| 23. The shoulder straps are marked where they have been secured for reapplication. | 0 | 1 |
| 24. The chest strap is marked where it has been secured for reapplication. | 0 | 1 |
| 25. The posterior straps are marked or taped where they have been secured for reapplication. | 0 | 1 |

**MAXIMUM TOTAL SCORE**

**GIVEN SCORE** (25)

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Bradley CS, Moktar J, Maxwell A, Wedge JH, Murnaghan ML, Kelley SP. A Reliable and Valid Objective Structured Assessment of Technical Skill for the Application of a Pavlik Harness Based on International Expert Consensus. *Journal of Pediatric Orthopaedics*. 2015. Epub June, 2015 ahead of print. doi: 10.1097/BPO.0000000000000557

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**Fig. 1.**
Table 1 highlights the participant (parents) scores on the OSATS and GRS (performance and final product) at each time point. At baseline testing, the two groups showed no statistically significant different mean values among the three evaluated parameters (OSATS, GRS performance and GRS product). Group 1 scored 6.7 [standard deviation (SD): 2.5] at OSATS, compared to 7.2 (SD = 2.7; p-value = 0.3) of group 2. GRS of performance in group 1 was found to be 1.3 (SD = 0.2), compared to 1.3 (SD = 0.3; p-value > 0.05) in group 2, while GRS of final product was 1.1 (SD = 0.2) for group 1, compared to 1.1 (SD = 0.1; p-value > 0.05) in group 2.

Post intervention (one hour after) evaluation of the parameters revealed statistically significant higher mean values of all three parameters in group 1, compared to group 2. Group 1 scored 19.6 (SD = 3.1) at OSATS, compared to 8.5 (SD = 2.5; p-value < 0.01) of group 2. GRS of performance in group 1 was found to be 2.6 (SD = 0.5), compared to 1.9 (SD = 0.7; p-value < 0.05) in group 2, while GRS of final product was 2.7 (SD = 0.5) for group 1, compared to 1.7 (SD = 0.5; p-value < 0.05) in group 2.

Retention values of OSATS at 1 month following intervention of group 1 were 19.1 (SD = 3.3), compared to 8.9 (SD = 3.1; p-value = 0.019) of group 2, while GRS product of group 1 was found to be 2.8 (SD = 0.5), compared to 2.7 (SD = 0.5; p-value = 0.721) in group 2. At 2-months post intervention the OSATS in group 1 was 19.3 (SD = 3.1), compared to 8.8 (SD = 2.9; p-value = 0.023) of group 2, while GRS product in group 1 was 2.7 (SD = 0.5), compared to 2.8 in group 2 (SD = 0.6; p-value = 0.663). At the 4-months follow-up OSATS in group 1 was 19.2 (SD = 3.3), compared to 10.2 (SD = 2.8; p-value = 0.038) in group 2, while the GRS product was 2.8 (SD = 0.5) in both groups.

Table 2 highlights the effectiveness of the learning module of Pavlik harness application on the DDH outcome. Regarding clinical outcome neither mean values of α-angle nor acetabular index were found to be statistically different between the two groups. More specifically, α-angle at baseline was found to be 50 degrees (SD = 3) in group 1, compared to 51° (SD = 4; p-value = 0.7) in group 2; at 1-month follow up 54° (SD = 11) in group 1, compared to 54° (SD = 8; p-value = 0.9) in group 2; at 2 months 56° (SD = 9) in group 1, compared to 57° (SD = 7; p-value = 0.9) in group 2 and at 4 months 62° (SD = 6) in group 1, compared to 61° (SD = 5; p-value = 0.6) in group 2.

Acetabular index at 4 months post intervention was 31° (SD = 4) in group 1, compared to 30° (SD = 4; p-value = 0.9) in group 2.

Treatment was successful (at the 4-months follow-up) in 95% of cases in both groups. The remaining patients were treated operatively.

**DISCUSSION**

DDH has been related to familial predisposition, prenatal and postnatal mechanical factors, racial predilection and female gender [12]. Pavlik harness represents the most common orthosis used in everyday practice for DDH treatment of children under the age of 6 months. This non-invasive treatment method has gained overall acceptance. However, its improper use has been associated with complications, such as avascular femoral head necrosis, brachial plexus palsy and femoral nerve palsy [9, 13].

During the treatment course with Pavlik harness, parents are required to reapply the device at home. Therefore, treatment relies upon parental cooperation, including the understanding of how to correctly apply the orthotic device [9]. It seems that the education of parents in Pavlik harness application may play a significant role for successful treatment. The present prospective study explored whether a validated Greek language OSATS (OSATS-GR) for the application of the Pavlik harness had an effect on the skill levels of parents regarding reapplication of the device by assessing the OSATS-GR and GRS among a group of parents receiving this additional education and a control group. Furthermore, the study evaluated whether the validated in the Greek language OSATS for the application of the Pavlik harness had an effect on the final outcome, by comparing sonographic findings (α-angle) and acetabulum index during the follow-up.

The study has shown that the studied parameters (OSATS-GR and GRS) were significantly higher in the group of parents receiving the learning module, when compared to the control group. OSATS-GR was statistically higher in the intervention group throughout the follow-up (up to 4 months). Similar findings have already been reported by Gargan et al for the OSATS score in English [8]. Gargan et al showed that parents, following intervention (educational process) and for a whole month after, had similar OSATS scores to those of experts [8].

The GRS product had no statistically significant difference between the 2 groups from the first follow-up (1 month). Therefore, although parents in the intervention group were better able to apply the Pavlik harness immediately after the intervention, the final
product from the initial 1-month follow-up did not differ between the two groups. Furthermore, sonographic and radiographic evaluation (α-angle and acetabular index) revealed no statistically significant difference throughout the follow-up among the two groups. Outcome was also similar (90% successful treatment in both groups). These results exhibit that exposure to the harness alone (standard demonstration with a doll) can alter the outcome of the application process, since the control group showed similar GRS at all follow-ups.

### TABLE 1.
**OSATS and GRS (performance and final product) mean values at each time point of the two groups. Data presented as means and standard deviation in parenthesis**

|                  | Group 1   | Group 2   | P value |
|------------------|-----------|-----------|---------|
| **Baseline**     |           |           |         |
| OSATS            | 6.7 (2.5) | 7.2 (2.7) | 0.291   |
| GRS performance  | 1.3 (0.2) | 1.3 (0.3) | n s     |
| GRS product      | 1.1 (0.2) | 1.1 (0.1) | n s     |
| **After intervention** |         |           |         |
| OSATS            | 19.6 (3.1)| 8.5 (2.5) | <0.01   |
| GRS performance  | 2.6 (0.5) | 1.9 (0.7) | 0.023   |
| GRS product      | 2.7 (0.5) | 1.7 (0.5) | 0.034   |
| **Retention 1 month** |         |           |         |
| OSATS            | 19.1 (3.3)| 8.9 (3.1) | 0.019   |
| GRS product      | 2.8 (0.5) | 2.7 (0.5) | 0.721   |
| **Retention 2 months** |       |           |         |
| OSATS            | 19.3 (3.1)| 8.8 (2.9) | 0.023   |
| GRS product      | 2.7 (0.5) | 2.8 (0.6) | 0.663   |
| **Retention 4 months** |       |           |         |
| OSATS            | 19.2 (3.3)| 10.2 (2.8)| 0.038   |
| GRS product      | 2.8 (0.5) | 2.8 (0.5) | n s     |

### TABLE 2.
**Clinical outcomes during follow-up. Data presented as means and standard deviation in parenthesis**

|                                | Group 1   | Group 2   | P value |
|--------------------------------|-----------|-----------|---------|
| α angle baseline               | 50 (3)    | 51 (4)    | 0.720   |
| α angle 1 month                | 54 (11)   | 54 (8)    | 0.866   |
| α angle 2 months               | 56 (9)    | 57 (7)    | 0.853   |
| α angle 4 months               | 62 (6)    | 61 (5)    | 0.562   |
| Acetabular index in 6 months age (degrees) | 31 (4)    | 30 (4)    | 0.853   |
| Duration of therapy (days)     | 122 (9)   | 120 (11)  | 0.791   |
| Success rate                   | 19/20     | 19/20     | ns      |
| Complications                  | 0         | 0         | ns      |
An educative module, such as the one performed in the present study, offers parents a detailed overview of the procedures that should be followed. Parents gain confidence and a higher degree of understanding that their cooperation is of utmost importance for a successful outcome.

Although it seems that such an educative module does not affect the final outcome of DDH, it has short term advantages that have to do with answering most of the parents’ questions in a systematic way. It is of paramount importance that healthcare providers still retain a significant role in parental education, particularly in assisting with setting of the required hip angles [11].

CONCLUSIONS

Simulated learning is gaining worldwide acceptance in medical and healthcare training. However, very few studies exist regarding the evaluation of this mode of teaching with parents. The present study represents the first attempt to use a validated Greek simulated learning module for correct Pavlik harness application. The skill levels of parents were increased after completion of this module. However, the study revealed that this had no significant impact on clinical outcome. More experience and data are needed from prospective studies with control groups evaluating the efficacy of such learning modules. Simulated learning may also become essential in teaching parents the correct application of Pavlik harness. However, it is of utmost importance to be under supervision with close follow-ups.

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Informed patient consent has been received.

REFERENCES

1. Ortolani M. Congenital hip dysplasia in the light of early and very early diagnosis. Clin Orthop Relat Res 1976; 119:6-10.
2. Dezateux C, Rosendahl K. Developmental dysplasia of the hip. Lancet 2007; 369:1541-1552.
3. Jackson JC, Runge MM, Nye NS. Common questions about developmental dysplasia of the hip. Am Fam Physician 2014; 90:843-850.
4. Ömeroğlu H. Treatment of developmental dysplasia of the hip with the Pavlik harness in children under six months of age: indications, results and failures. J Child Orthop 2018; 12:308-316.
5. Graf R. New possibilities for the diagnosis of congenital hip joint dislocation by ultrasonography. J Pediatr Orthop 1983; 3:354-359.
6. Pavlik A. The Functional Method of Treatment Using a Harness With Stirrups as the Primary Method of Conservative Therapy for Infants With Congenital Dislocation of the Hip. Clin Orthop Relat Res 1992; 281:4-10.
7. Pavlik A. To the question of originality of treatment of congenital hip dysplasias by active movement in the stirrups. J Pediatr Orthop B 2001; 10:165-168.
8. Gargan KE, Bradley CS, Maxwell A, Moktar J, Wedge JH et al. Education of parents in Pavlik harness application for developmental dysplasia of the hip using a validated simulated learning module. J Child Orthop 2016; 10:289-293.
9. Bradley CS, Moktar J, Maxwell A, Wedge JH, Murnaghan ML et al. A Reliable and Valid Objective Structured Assessment of Technical Skill for the Application of a Pavlik Harness Based on International Expert Consensus. J Pediatr Orthop 2016; 36:768-372.
10. Beaton DE, Bombardier C, Guillemin F, and Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine 2000; 25:3186-3191.
11. Moktar J, Bradley CS, Maxwell A, Wedge JH, Kelley SP et al. Skill Acquisition and Retention Following Simulation-Based Training in Pavlik Harness Application. J Bone Joint Surg Am 2016; 98:866-870.
12. Kocher MS. Ultrasonographic screening for developmental dysplasia of the hip: an epidemiologic analysis (Part I). Am J Orthop 2000; 29:929-933.
13. Mooney JF III and Kasser JR. Brachial Plexus Palsy as a Complication of Pavlik Harness Use. J Pediatr Orthop 1994; 14:677-679.
Appendix

OSATS- GR

(Instructions to Candidates: The patient has been di-
agnosed with DDH. Apply a Pavlik Harness.)
Οδηγίες στους υποψήφιους: Ο ασθενής έχει διαγνωσθεί με DDH. Εφαρμόστε τον χιδημόνα Pavlik.

| ITEM | ANTIKEIMENO | (Not done) | Δεν έγινε/ (Incorrect) | Έγινε/ (Correct) | Αλάθος | Σωστό |
|------|-------------|------------|------------------------|------------------|--------|--------|
| 1.   | (The baby should be undressed. A diaper/nappy and a single thin layer body garment can remain.) Το βρέφος πρέπει να είναι γυμνό. Η πάνα και ένα λεπτό φανελάκι μπορούν να παραμείνουν. | 0 | 1 |
| 2.   | (The correct size harness should be chosen. While not essential, the baby’s chest circumference can be measured at the nipple line using a tape measure as a guide.) Πρέπει να επιλεγεί το σωστό μέγεθος του χιδημόνα. Για να επιτευχθεί, πρέπει να μετρηθεί η περίμετρος του θώρακα στο ύψος των θηλών με τη βοήθεια μιας μεζούρας. | 0 | 1 |
| 3.   | (If the baby is on the border of 2 sizes of harnesses, the larger size should be chosen.) Αν το βρέφος είναι μεταξύ δυο διαθέσιμων μεγεθών, θα πρέπει να επιλεγεί το μεγαλύτερο μέγεθος. | 0 | 1 |
| 4.   | (Halter, Chest and Shoulder Straps:) Κορμός, Στήθος και Τιράντες: | 0 | 1 |
| 5.   | (The straps on the harness halter should be opened.) Οι αγκράφες του κορμού του χιδημόνα πρέπει να είναι ανοιχτές. | 0 | 1 |
| 6.   | (The opened harness halter should be placed on the bed, front side facing up.) Ο αναγκαίος κορμός του χιδημόνα πρέπει να είναι τοποθετημένος στο κρεβάτι, κοιτώντας προς τα πάνω. | 0 | 1 |
| 7.   | (The baby should be placed supine on top of the halter.) Το βρέφος πρέπει να τοποθετηθεί ύπτια πάνω από τον κορμό του χιδημόνα. | 0 | 1 |
| 8.   | (The chest strap should be checked by being able to comfortably insert two fingers inside the strap.) Η αγκράφα του στήθους πρέπει να ελεγχθεί ώστε να περνούν δυο δάκτυλα μέσα από τον κορμό του χιδημόνα. | 0 | 1 |
| 9.   | (The shoulder straps should be checked to cross posteriorly, then brought over the shoulders and threaded through the buckles on the chest strap.) Οι τιράντες πρέπει να ελεγχθούν ώστε να διασταυρώνονται πίσω, έπειτα πάνω από κάθε ώμο και πρέπει να περνούν μέσα από τις ειδικές εγκοπές στον κορμό του χιδημόνα. | 0 | 1 |
| 10.  | (The shoulder straps should be secured to keep the chest strap at the level of the nipple line around the entire chest wall.) Οι τιράντες πρέπει να είναι ασφαλισμένες στον κορμό στο ύψος των θηλών σε όλη την περιμέτρη του θώρακα. | 0 | 1 |
| 11.  | (Stirrups, Anterior and Posterior Straps:) Αναβολέες, Πρόσθιοι και Οπίσθιοι ιμάντες: | 0 | 1 |
| 12.  | (The foot stirrup straps should be opened.) Οι αγκράφες του αναβολέα πρέπει να είναι ανοιχτές. | 0 | 1 |
| 13.  | (The foot stirrups should be applied to the correct foot.) Οι αναβολέες πρέπει να είναι τοποθετημένοι στο σωστό πόδι. | 0 | 1 |
| 14.  | (The foot stirrup straps should be secured around the lower leg.) Ο κάθε αναβολέας πρέπει να είναι ασφαλισμένος στο κάθε άκρο. | 0 | 1 |
| Number | Description |
|--------|-------------|
| 14. | (Each foot needs to be held in the foot piece/arch support using the provided sock or a soft shoe.) Κάθε πόδι πρέπει να κρατείται μέσα στον ειδικό μάντα με τη βοήθεια της ειδικής κάλτσας ή ενός λεπτού υποδήματος. |
| 15. | (The anterior (hip flexion) straps should be pulled through the correct buckle on each side.) Οι πρόσθιοι μάντες (χάμη του ισχίου) πρέπει να περάσουν μέσα από την σωστή πόρπη σε κάθε πλευρά. |
| 16. | (The line of pull of the anterior straps should follow the anterior axillary line on each side.) Η ευθεία έλξη των πρόσθιων μάντων πρέπει να ακολουθεί την πρόσθια μασχαλιαία γραμμή σε κάθε πλευρά. |
| 17. | (The right and left anterior straps should be adjusted and secured with the hips in 90° to 110° of flexion.) Και οι δύο πρόσθιοι μάντες πρέπει να ρυθμιστούν και να ασφαλιστούν με τα ισχία σε κάμψη μεταξύ 90° και 110°. |
| 18. | (The posterior (adduction limiting) straps should be pulled through the correct buckle on each side.) Οι οπίσθιοι μάντες (περιορισμός προσαγωγής) πρέπει να περάσουν μέσα από την σωστή πόρπη σε κάθε πλευρά. |
| 19. | (The posterior straps should be adjusted and secured to allow for abduction by gravity (not forced abduction.).) Οι οπίσθιοι μάντες πρέπει να ρυθμιστούν και να ασφαλιστούν ώστε να επιτρέπουν την απαγωγή των ισχίων από τη βαρύτητα. |
| 20. | (The posterior straps should be adjusted to restrict hip adduction beyond neutral.) Οι οπίσθιοι μάντες πρέπει να ρυθμιστούν και να ασφαλιστούν ώστε να αποτρέπουν την προσαγωγή πέρα από την ουδέτερη θέση. |
| 21. | (The final position of each hip is re-checked once all straps are secured.) Η τελική θέση κάθε ισχίου πρέπει να ελεγχθεί μετά από την ασφάλιση όλων των μάντων. |

(For Future Reapplication:) Για μελλοντική επανατοποθέτηση:

22. The anterior (hip flexion) straps are marked or taped where they have been secured for reapplication. Οι πρόσθιοι μάντες σημειώνονται με μαρκαδόρο ή ταινία που έχουν ασφαλιστεί για την επανατοποθέτηση. |
| 23. | (The shoulder straps are marked where they have been secured for reapplication.) Οι τιράντες σημειώνονται με μαρκαδόρο που έχει ασφαλιστεί για την επανατοποθέτηση. |
| 24. | (The chest strap is marked where it has been secured for reapplication.) Ο κορμός του κηδεμόνα σημειώνεται με μαρκαδόρο που έχει ασφαλιστεί για την επανατοποθέτηση. |
| 25. | (The posterior straps are marked or taped where they have been secured for reapplication.) Οι οπίσθιοι μάντες σημειώνονται με μαρκαδόρο ή ταινία που έχουν ασφαλιστεί για την επανατοποθέτηση. |

(MAXIMUM TOTAL SCORE) ΜΕΓΙΣΤΗ ΔΥΝΑΤΗ ΒΑΘΜΟΛΟΓΙΑ (25) (GIVEN SCORE) ΤΕΛΙΚΗ ΒΑΘΜΟΛΟΓΙΑ