原作者及出處 (Original):

Tuijtelaars JAM, Leonardi-Figuiredo MM, Crescencio J, Gallo L Jr, Martinez EZ, Bloemen M, Takken T, Mattiello-Sverzut AC.
Pediatr Phys Ther. 2019;31(2):185-190. doi: 10.1097/PEP.0000000000000590.

翻譯者 (Translator):

李曜全
中國醫藥大學物理治療學系助理教授，臺中，臺灣

校閱者 (Reviewer):

劉文瑜
長庚大學物理治療學系副教授，桃園，臺灣

題目 (Title):

使用手搖式測功儀進行脊柱裂兒童之心肺運動測試: 尖峰攝氧量之預測模型
Cardiopulmonary Exercise Test Using Arm Ergometry in Children With Spina Bifida: A Prediction Model for O2peak.

摘要中文翻譯

目的：

本研究旨在建立脊柱裂(spina bifida)兒童之尖峰攝氧量(peak oxygen uptake, O2peak)的預測模型，納入最大做功量(peak workload, Wpeak)、最大心跳率、年齡、性別、人體測量、步行程度、身體活動程度、以及受傷的階層做考量。

方法：

26位脊柱裂受試者執行漸進式手搖測試(graded arm crank test)的資料用以建立預測模型。而另一組非相關脊柱裂受試者的數據資料則用以進行驗證。

結果：

以下公式被建立出來預測脊柱裂受試者之O2peak： O2peak (mL/min) = 194+18 × Wpeak - 110 × 性別 (adjusted R = 0.933, SEE = 96 mL/min)。Bland-Altman分析顯示，O2peak的測量值與預測值之間的平均數差異(-0.09 L/min)未有顯著差異，且其一致性的限定值為-0.4036與0.2236 L/min。

結論：

此預測公式顯現出好的成果；但在臨床實際應用之前，仍須進一步使用相同的測驗流程進行驗證。

Original Abstract

PURPOSE:
This study aimed to develop a prediction model for peak oxygen uptake (O2peak) in children with spina bifida (SB), considering peak workload (Wpeak), peak heart rate, age, sex, anthropometric measures, walking level, physical activity level, and level of the lesion.

METHODS:
Data of 26 participants with SB performing a graded arm crank test were used to develop the prediction model. An unrelated data set of participants with SB was used for validation.

RESULTS:
The following equation was developed to predict O2peak of participants with SB: O2peak (mL/min) = 194+18 × Wpeak - 110 × sex (adjusted R = 0.933, SEE = 96 mL/min). Bland-Altman analysis showed a nonsignificant mean difference between the measured and predicted values of O2peak (-0.09 L/min) and limits of agreement of -0.4036 and 0.2236 L/min.

CONCLUSIONS:
The prediction model shows promising results; however, further validation using the same protocol is warranted before implementation in clinical practice.