Some do and some don’t, but who will and who won’t: can patterns of physical activity maintenance be predicted in children and young people with cystic fibrosis?

H. Douglas1,2, E. Raywood1, G. Tamrivi1, N. Filipow1, K. Kapoor1, S. Stanovjevic3, R. O’Connor4, N. Murray5, M. Bryon2, E. Main1, Great Ormond Street Institute of Child Health, UCL, London, United Kingdom; Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom; Dalhousie University, Halifax, Canada; Barts Health NHS Trust, London, United Kingdom; Guy’s and St Thomas’ NHS Foundation Trust, London, United Kingdom

Introduction: Maintaining adequate levels of physical activity (PA) is important for the health and well-being of children and young people with cystic fibrosis (CYPwCF). Identifying who maintains adequate levels and who needs targeted support is difficult in the clinical setting. This study aimed to identify whether PA maintenance could be predicted by exercise capacity, self-efficacy for PA and self-reported PA in 78 CYPwCF aged 6–16-years.

Methods: All participants wore activity trackers (Fitbit Alta HR™) for at least 2-months (mean ± SD 154 ± 51 days) to enable daily capture of time spent in moderate-to-vigorous PA (MVPA). Exercise capacity (from 25-level 10 m Modified Shuttle Walk Test) was measured at baseline and questionnaires were used to measure self-efficacy for PA (Children’s Self-perception of Adequacy in and Prediction for Physical Activity) and self-reported PA (Habitual Activity Estimation Scale) after at least 2 months of PA tracking. Linear Discriminant Analysis was conducted to investigate if patterns of PA maintenance (from Latent Class Growth Analysis (LCGA)) could be predicted by exercise capacity, self-efficacy for PA or self-reported PA.

Results: The LCGA model identified 5 different patterns of PA maintenance, including 7 (9%) CYPwCF who maintained regular high PA, 18 (23%) who maintained very little activity, and 52 (68%) who were active sometimes but not routinely. Using simple and routine clinical measurement tools could only predict maintenance of PA pattern (represented by the 5 LCGA classes) in 45% of cases.

Conclusion: Patterns of PA must be directly and objectively measured to gain a true insight into the maintenance of PA in CYPwCF. These findings are significant for CF clinical teams. Accurately identifying patterns of, and factors affecting, PA maintenance, could enable clinical teams to facilitate the right type and level of support for individual CYPwCF to optimise outcomes.

Feasibility of performing the three-minute step test with remote supervision in children and adolescents with cystic fibrosis

M.V.F. Donadio1,2, F.M. Vendrusculo1, G.A. da Costa1, M.A. Bagatini1, B.M.H.M. Lemes3, C.A. Faria3, L.C. de Oliveira3, E.S. Aquino3,4, Pontificia Universidad Catolica do Rio Grande do Sul (PUCRS), Infant Center, Porto Alegre, Brazil; Universitat Internacional de Catalunya, Department of Physiotherapy, Barcelona, Spain; Pontificia Universidad Catolica de Minas Gerais, Department of Physiotherapy, Betim, Brazil; Hospital Infantil João Paulo II – Fundação Hospitalar do Estado de Minas Gerais, Department of Physiotherapy, Belo Horizonte, Brazil

Objective: The three-minute step test (3MST) is a simple and easy-to-apply option to monitor submaximal exercise capacity, although its use via remote video monitoring has not been investigated in children with cystic fibrosis (CF). This study aimed to assess the feasibility and reproducibility of performing the 3MST with remote supervision in CF children and adolescents.

Methods: A cross-sectional study including CF patients between 6 and 18 years from two CF services was performed. Demographic, anthropometric, clinical and lung function data were collected and two 3MST were performed: (i) personally supervised (T1), and (ii) remotely supervised by video-monitoring (T2). Before and after the tests, heart rate (HR), oxygen saturation (SpO₂), and the BORG score for dyspnea and lower limb fatigue were monitored. HR and SpO₂ were also collected at 3-min recovery. Ethical approval was obtained. Data were analyzed using a paired t-test, intraclass correlation coefficient (ICC), Pearson correlation and the Bland-Altman tests.

Results: Twenty-three patients with a mean age of 10.7 ± 3.7 years and mean forced expiratory volume in one second (FEV₁) of 89.5 ± 23.2% were included. There were no significant differences between tests in final HR (p = 0.24), delta HR (p = 0.33), HR at 3-min recovery (p = 0.40), final SpO₂ (p = 0.45), SpO₂ at 3-min recovery (p = 0.20), and final dyspnea score (p = 0.88). The ICC was 0.852 (p < 0.001) for final HR, 0.762 (p < 0.001) for final SpO₂ and 0.775 (p < 0.001) for final lower limb fatigue. Significant and moderate correlations were found between the tests for final HR (r = 0.75), delta HR (r = 0.61), final SpO₂ (r = 0.61), final dyspnea (r = 0.47) and lower limb fatigue (r = 0.64). The Bland-Altman analysis showed a mean difference in final SpO₂ between tests of 0.3% (limit of agreement – 3.0 to 3.5%).

Conclusion: The use of the 3-minute step test performed remotely was feasible, presenting good reproducibility between tests in children and adolescents with CF.

Can the 6-minute walking test assess physical activity level among people with cystic fibrosis?

J. Kouvisi1, E.-A. Chrysocookou1, E. Kouidi2, J. Tsanakas1, E. Hatzigiourov1, Aristotle University of Thessaloniki, CF Unit, 3rd Paediatric Dept, Thessaloniki, Greece; Aristotle University of Thessaloniki, Laboratory of Sports Medicine, Thessaloniki, Greece

Introduction: Regular exercise is an essential tool in the therapeutic approach in cystic fibrosis. Aim: To evaluate the correlation of the exercise capacity assessed by the 6-Minute Walking Test (6-MWT) with quality of life and physical activity in patients with cystic fibrosis.