Short and long term impact of an individualized, prescribed and guided physical activity program in patients with haemophilia and health care professionals: a pilot study HEMOSPORT

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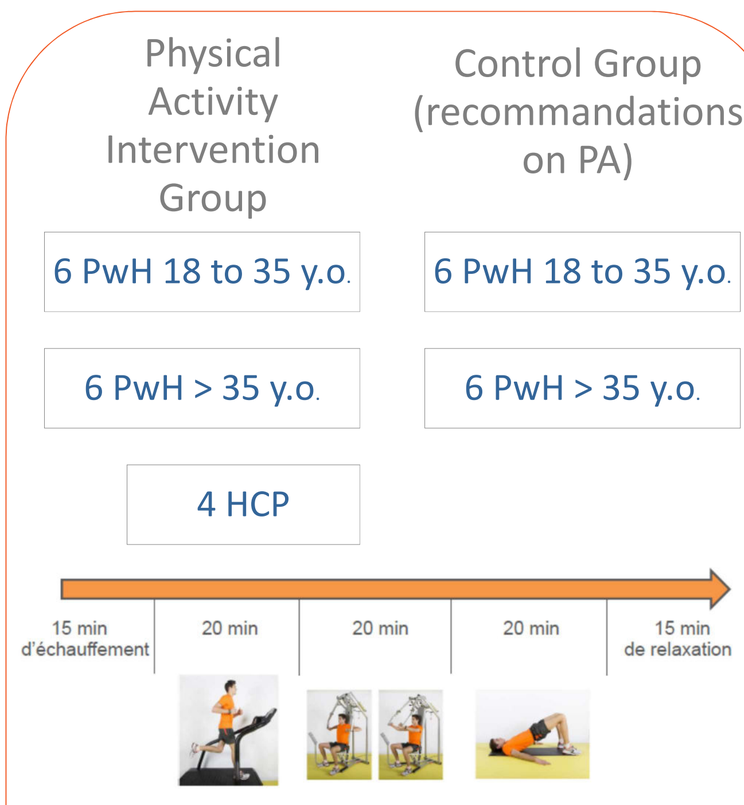
Introduction

Prophylaxis enabled patients with haemophilia (PwH) to practice physical activity (PA) or sports [1-3], thus promoting normal neuromuscular development, bone development, muscle strengthening, coordination, physical functioning and self-esteem [4].

Recommendations and discussions regarding the choice of PA are frequently done in Haemophilia Treatment Centres (HTC) however some patients are still reluctant to practice regular PA [5].

The aim of HEMOSPORT study is to describe the impact of a prescribed, individualized and guided PA program, strengthened by concomitant participation of HCP from our HTC to the same PA program. The persistence of PA practice at long term, constraints and safety issues will also be assessed.



20-weeks guided physical activity program

Methods

Our prospective, monocentric, descriptive pilot study will be conducted in our HTC in collaboration with the sports-medicine centre MON-STADE, Paris. This project will include 24 PwH: 6 patients aged 18 to 35 and 6 patients > 35 receiving an individualized and guided PA program, and their age-BMI-matched control group receiving only recommendations on PA at inclusion. The impact of a shared participation of 4 HCP of our HTC in the similar PA program to reinforce motivation and adherence will also be captured.

At the beginning, we will assess body composition (five-body compartments: fat mass, lean body mass, bone mass, extracellular and intracellular water) using dual-energy X-ray absorptiometry (DEXA) scan (Hologic® Discovery W QDR-4500A) and bioelectrical impedance analysis (Z-Metrix® BioPharHom), strength tests (Keiser® Air 420) and aerobic exercise tests (Medgraphics® Ultima Cardio O_2), before setting a 20-weeks program of varied PA sessions three times a week. Assessments will be repeated at 20 weeks, 12 and 24 months after inclusion.

The primary objective will be the change of maximal oxygen consumption ($\dot{V}O_2max$) between baseline and the end of the study, in patients following PA program compared to the control group.

The secondary objectives will be to assess the impact of this program in terms of:

1) Strength capacity: muscle strength and power (force/speed curves) using pneumatic leg-press (LP) and chest-press (CP) machines (Keiser® Air 420); Trunk extensor muscles using Sørensen [6,7] test and abdominal muscles with Shirado test [8];
2) Proprioceptive imbalances (single leg balance test) and trunk flexibility (sit and reach test);
3) Aerobic capacity: aerobic and anaerobic thresholds, maximal aerobic power in Watts (on cycle ergometer) or velocity in km/h (on treadmill);
4) Biological tests: HbA1C, glycaemia, LDL- and HDL-cholesterol, insulin, leptin, IL6, TNFα);
5) Quality of life [9] and modification of lifestyle habits, SF-36 questionnaire [10], POMS questionnaire [11] and Ricci & Gagnon self-questionnaire [12].

The Annual Bleeding Rate and Annual Joint Bleeding Rate ABR, ABJR (spontaneous and post injury) and treatment adaptations will also be evaluated and compared.

Our pilot study is planned to start mid 2017,
and the first results are expected by end 2018.

Conclusion

Our prospective pilot study will assess the short and long term impact of an individualized, prescribed and guided PA program in PwH. The HCP participating in this program might better perceive both the benefits and constraints of such program and propose tailored made activity for PwH.

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