The usability of app-based spirometry tests for detection of exercise-induced bronchoconstriction in athletes

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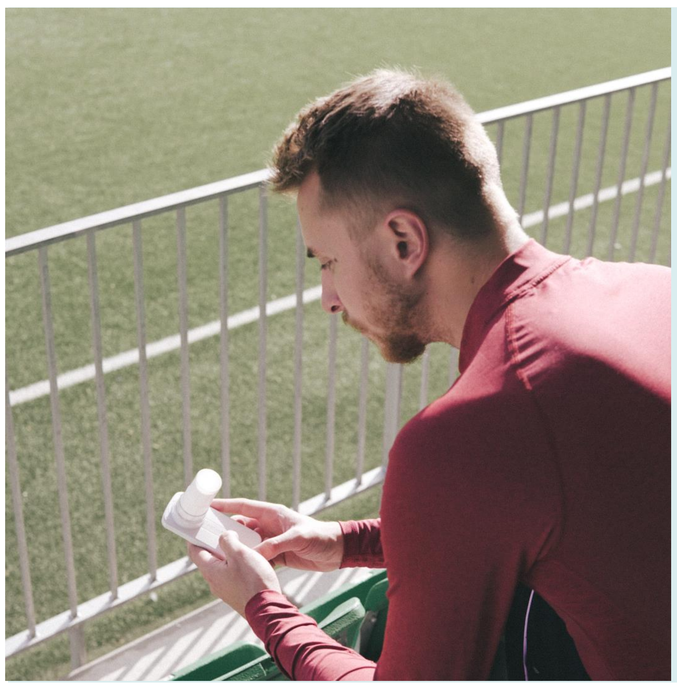

App-based field exercise challenge tests is a feasible and simple method for detecting exercise induced bronchoconstriction in athletes with respiratory symptoms

Exercise-induced bronchoconstriction is triggered by strenuous physical activity. Field exercise challenge tests may have advantages because of the ability to simulate the athlete's natural training environment.

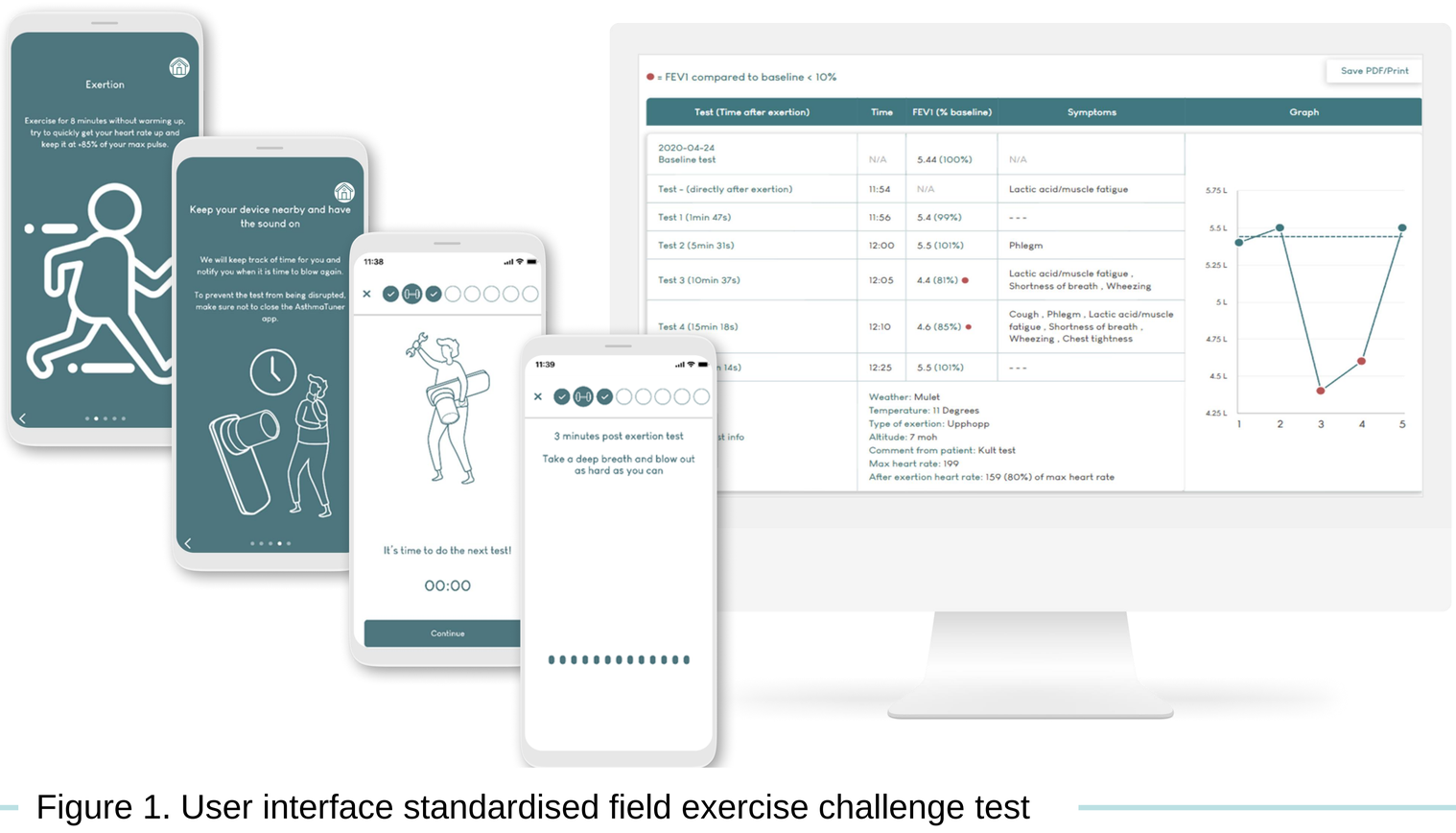

Figure 1. User interface standardised field exercise challenge test

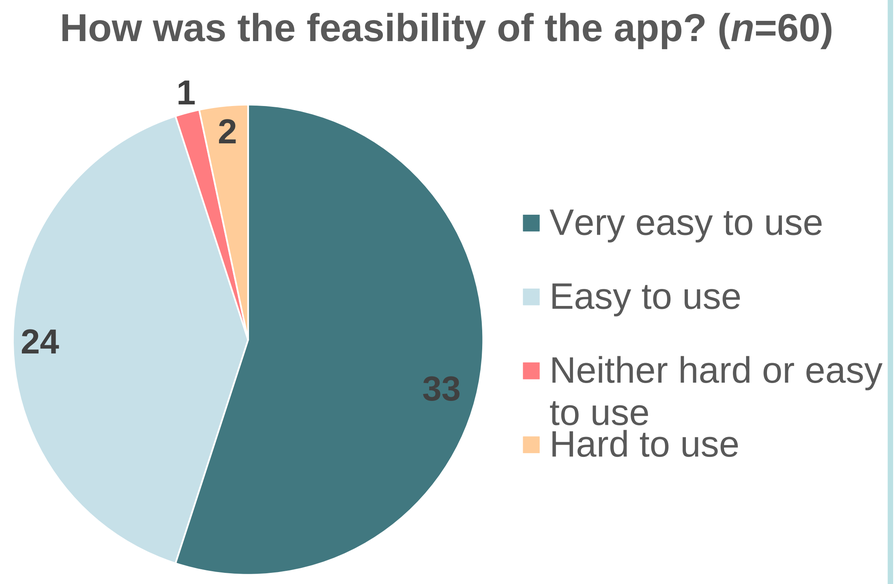

Figure 2. Usability of the app

Methods

60 athletes (15-28 years of age) with self-reported symptoms of exercise induced bronchoconstriction were equipped with AsthmaTuner and instructed to perform both unstandardised and standardised field exercise challenge tests. Participants also performed methacholine bronchial provocation and eucapnic voluntary hyperpnoea (EVH) test. FEV1 was measured pre and repeatedly up to 30-minutes post test.

Results

55 of 60 participants completed an unstandardised ECT, while all participants performed a standardised ECT. No adverse events were reported. 57 of 60 reported the app was easy to use. Unstandardised ECT was positive in 36%, while standardised ECT in 35%, methacholine in 22% and EVH in 20%.

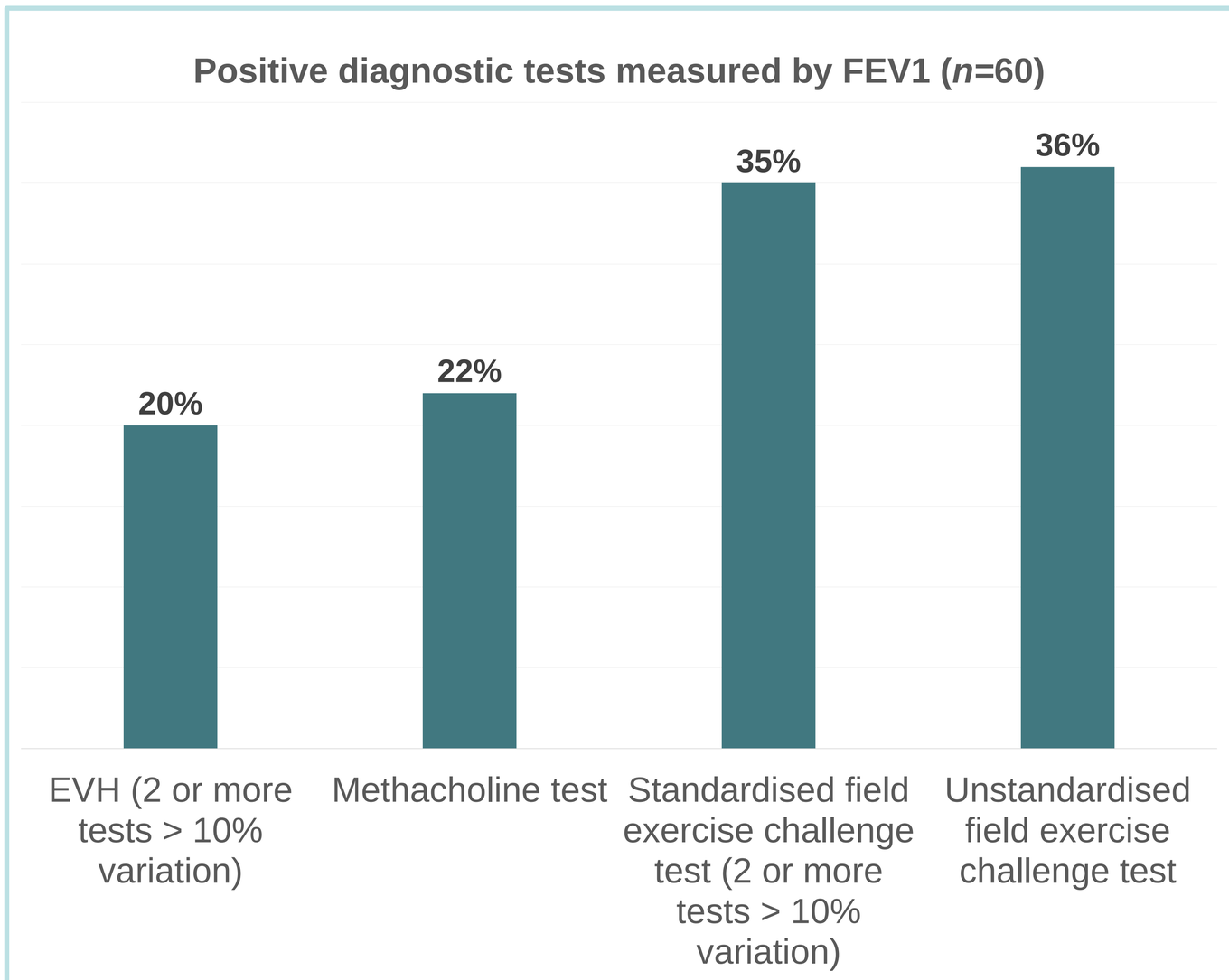

Figure 3. Positive diagnostic tests by percentage measured by FEV1

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