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FRI0055

AN EQUATION FOR ESTIMATED CARDIORESPIRATORY FITNESS IN RHEUMATOID ARTHRITIS PATIENTS IS NEEDED

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Background: RA patients are deconditioned and on average have decreased cardiorespiratory fitness (CRF, peak oxygen uptake) compared to the general population (1). This may contribute to an increased risk of cardiovascular disease (CVD). Because CRF is associated with cardiovascular health, it is important to assess. For the general population, various equations exist for estimation of CRF (eCRF) without the need of a resource-intensive cardiopulmonary exercise test.

Objectives: Compare eCRF of people without RA to eCRF of RA patients, using recognized equations for eCRF (2,3) based on gender, age, resting heart rate, waist circumference and self-reported physical activity.

Methods: Among participants with self-reported RA in the second and third surveys of the Norwegian population-based Nord-Trøndelag Health Study (HUNT2 and 3)(4), RA patients were identified from hospital case files using standardized diagnostic criteria (5). The mean eCRF of participants with and without RA were calculated and the 95% confidence intervals (CI) compared.

HUNT2	Men (no RA)	Men (RA)	Women (no RA)	Women (RA)
	Mean eCRF (CI), n	Mean eCRF (CI), n	Mean eCRF (CI), n	Mean eCRF (CI), n
30-39 years	50.3(50.2-50.5), 5,134	49.5(45.6-53.4), 8	40.3(40.2-40.4), 5,623	38.7(37.2-40.1), 25
40-49 years	46.2(46.1-46.3), 6,104	46.7(44.8-48.6), 22	36.6(36.5-36.7), 6,496	36.2(35.2-37.2), 72
50-59 years	42.2(42.0-42.3), 4,910	40.9(39.6-42.3), 50	32.9(32.8-33.1), 4,994	31.5(30.7-32.4), 75
60-69 years	38.3(38.2-38.5), 3,600	39.2(37.7-40.6), 40	29.0(28.9-29.1), 3,441	28.6(27.7-29.5), 71
70-79 years	34.7(34.5-34.9), 2,678	34.3(31.9-36.6), 20	25.3(25.2-25.5), 2,608	25.3(23.9-26.7), 32
80-89 years	30.4(30.0-30.8), 677	n=0	22.1(21.9-22.4), 871	24.0(18.1-29.9), 4
HUNT3	Men (no RA)	Men (RA)	Women (no RA)	Women (RA)
	Mean eCRF (CI), n	Mean eCRF (CI), n	Mean eCRF (CI), n	Mean eCRF (CI), n
30-39 years	46.6(46.4-46.9), 2,069	47.3(24.5-119.0), 2	37.1(36.9-37.2), 3,189	34.7(30.8-38.5), 9
40-49 years	43.3(43.1-43.5), 3,406	46.5(10.2-82.9), 2	34.8(34.7-34.9), 4,668	34.9(32.9-36.8), 21
50-59 years	39.5(39.4-39.7), 4,153	39.5(37.4-41.5), 19	31.5(31.4-31.7), 4,994	30.2(29.1-31.4), 56
60-69 years	36.2(36.0-36.3), 3,764	33.1(31.3-34.8), 41	28.2(28.1-28.4), 4,222	27.5(26.5-28.6), 58
70-79 years	33.0(32.8-33.2), 2,149	34.3(32.4-36.1), 35	24.9(24.8-25.1), 2,284	24.4(23.2-25.5), 41
80-89 years	29.7(29.4-30.1), 708	28.3(24.5-32.0), 8	22.6(22.3-22.8), 812	22.8(21.2-24.3), 14

Table 1. Mean eCRF (mL/(kg x min)) and 95% CIs of RA patients and participants without RA attending HUNT2 and 3. Age categories with n<8 RA patients in grey.

Conclusion: The eCRF CIs of RA patients and participants without RA were overlapping in all age categories except for men aged 60-69 years in HUNT 3 (Table1). This is contradictory to previous findings where RA patients were deconditioned compared to healthy controls (1). A probable explanation is that equations for eCRF were developed from healthy populations, and therefore overestimate eCRF in RA patients. For better CVD risk management including CRF as an important risk factor, an equation for eCRF developed specifically for RA patients is needed.

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FRI0056

NESTED CASE-CONTROL STUDY : ASSOCIATED FACTORS WITH INSULIN RESISTANCE IN A RHEUMATOID ARTHRITIS INCEPTION COHORT

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Objectives: To assess insulin resistance (IR) in patients with rheumatoid arthritis (RA) and compare it with healthy controls and to analyze the association between the accumulated inflammatory burden in patients with RA and IR.

Methods: Design: Nested case-control study. Population: consecutive RA-patients (ACR/EULAR 2010 criteria), >16 years, selected from a prospective inception cohort (diagnosis of RA between 2007 and 2011). Patients with Diabetes Mellitus (according to ADA 2010 criteria) were excluded. Controls: sex- age and BMI -matched controls were collected from a health center in our hospital area. Protocol: Cases and controls were evaluated by a rheumatologist. Clinical data of disease activity (RA patients), analytical values and oral glucose tolerance test (OGTT) were determined. Main outcome: IR measured by the homeostasis model for insulin resistance (HOMA-IR) (IR> 2.29 $\mu\text{U}^*\text{mmol/ml}$). Secondary outcome: IR measured by quantitative insulin sensitivity check index (QUICKI) (<0.337 $\mu\text{U}^*\text{mmol/ml}$) and by the homeostatic model assessment of β -cell function (HOMA β). Variables: Demographic, clinical-analytical variables, Disease Activity Score of 28 joints (DAS28-ESR), Health Assessment Questionnaire (HAQ), BMI (according to OMS classification) and glucose and insulin before and after OGTT values. Statistical analysis: Descriptive and paired T-test or Chi-square test followed by Multivariate Linear Regression in RA patients (Dependent variable: HOMA-IR).

Results: Two hundred subjects were studied, 31 of them were excluded after OGTT. Finally 169 subjects were included; 89 RA and 80 controls. The mean age of patients with RA was 56.6($\pm$ 10.9) years. Most of them were women (75.3%), with seropositive (FR 82.0% y ACPA 75.3%) and erosive (61.1%) RA. The average duration of the disease was 98 months (8.1 years). The delay in the diagnosis of RA was 10.9 months (5.4 - 25.6) with a mean DAS28 index since the beginning of the disease of 3.11 (0.8). Differences between clinical characteristics and in relation to IR between cases and controls are shown in Table 1. No significant differences in the proportion of subject with IR in cases and controls were observed and 28.1% of patients with RA had IR. Of the 25 patients with IR, the majority, 68%, presented a DAS28 score> 3.2 (moderate-high activity index). In multivariate analysis, the independent variables associated with IR in patients with RA were: Obesity [OR=6.01; β =1.795 (p=0.002), disease activity (OR=2.77; β =1.021 [p=0.009]) IL-1 β (OR=1.59; β =0.464 (p=0.024)). This model would explain 37.5% of the variability of the IR (R²=0.375).

Conclusion: We did not find an increased IR in patients with RA compared with healthy controls, which may be due to adequate treatment and good control of inflammatory activity in the most of patients with RA. Obesity, inflammatory activity (measured by mean DAS28 index) and IL-1 β were the predictors of IR in patients with RA in our study.

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