

Physical activity levels in patients with chronic pancreatitis compared to controls

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Background

Potential benefits of physical activity in chronic pancreatitis (CP) include treatment of sarcopenia, osteoporosis, and the management of pain and fatigue. However, there is little supportive evidence and our prior systematic review (2022) found just one interventional study investigating the benefits of physical activity in CP¹.

Recently-updated World Health Organisation (WHO) guidelines for chronic conditions² recommend engaging in 150–300 minutes of moderate-intensity aerobic physical activity weekly, or 75–150 minutes of vigorous intensity aerobic physical activity weekly, or an equivalent combination for substantial health benefits.

There are no CP-specific physical activity recommendations and, in fact, little is known regarding actual activity levels in this group.

Aims

To compare the physical activity levels of patients with CP to that of a.) controls and b.) the WHO guidelines for chronic conditions.

Participants

N=200 patients from our pancreatitis database were screened, and of n=57 eligible patients (adults with confirmed CP, >5 years since diagnosis), n=17 agreed to participate and n=16 ultimately completed the assessment.

N=15 healthy, non-pancreatitis controls were recruited (matched for sex, age and BMI, *Table 1*). There were more smokers and fewer drinkers in the CP group.

Assessment

Participants were provided with an Actigraph WGT3X-BT accelerometer (attached to an elasticated belt over the right hip, Figure 1) for 1 week. To identify physical activity at different intensities, vector magnitude count thresholds were used.

Physical activity intensity was classified as light/ moderate/vigorous and combined moderate-vigorous physical activity (MVPA). Low intensity physical activity ranged from 100-2,019 counts/minute, moderate intensity ranged from 2,020 to 5,998 counts/minute and vigorous intensity was >5,999 counts/minute (Troiano cut-offs).

Weight (Kg)/height (M) to determine body mass index (BMI, Kg/M²) were self-reported.



Figure 1 Actigraph WGT3X-BT Accelerometer

Group		Chronic pancreatitis (n=16)	Controls (n=15)	P Value
Sex, n (%)	Male	10 (62.5)	10 (66.6)	0.12#
	Female	6 (37.5)	5 (33.3)	
BMI, mean (SD)	Whole Group	25.2 (4.2)	27.7 (3.8)	0.08^
Age, mean (SD)	Whole Group	50.3 (9.8)	45.3 (10.3)	0.18#
	Male	51.7 (8.5)	46.4 (8.2)	
	Female	47.8 (12.1)	43.0 (14.5)	

Table 1: Descriptive statistics for chronic pancreatitis patients and controls Compared using ^Student's T-test or # Chi-squared test

	Chronic pancreatitis Median (IQR)	Controls Median (IQR)	P Value^
Sedentary activity, minutes	6,088.5 (7385)	4,914 (3,275)	0.654
% time in sedentary activity	79.1 (18.5)	73.6 (7.7)	
Light activity, minutes	420 (1,417)	1,496 (1,609)	0.045*
% time in light activity	21.1 (27.6)	23.4 (11.3)	
Moderate activity, minutes	21.5 (100.25)	121 (204)	0.012*
% time in moderate activity	1.8 (2.9)	2.6 (1.8)	
Vigorous activity, minutes	0 (0)	0 (3)	0.281
% time vigorous activity	0 (0)	0 (0.4)	
MVPA, minutes	21.5 (100.25)	124 (204)	0.012*
% MPVA	1.1 (3.6)	2.53 (3.6)	

Table 2: Activity levels compared between chronic pancreatitis patients and controls ^Compared using Mann Whitney U test; * significantly different

Results

Participants with CP spent a significantly less time in light, moderate, and MVPA activity than those in the control group. There was no significant difference between the groups for sedentary or vigorous activity (*Table 2*).

There was no significant difference when activity was assessed in bouts of 10-minute activity.

N=6 control subjects (40%) met the WHO Guidelines¹ for moderate activity in healthy adults, while n=2 (12.5%) patients with chronic pancreatitis met this benchmark. The remainder of the chronic pancreatitis patients (10/16, 63%), and 4/15 (27%) of the control group undertook less than 60 mins of moderate physical activity during the study period.



Conclusions

Patients with CP were significantly less physically active than control subjects, although both patients and controls exhibited objectively low levels of activity. A minority of patients met the WHO guidelines for chronic conditions.

The study was limited in numbers as it was conducted during the Covid19 pandemic which limited face-to-face contact, thereby affecting recruitment. However, of those agreeing to participate, there was high compliance with the assessment, showing that CP patients were amenable to physical activity measurement over a week-long period. The pandemic may also have affected activity levels.

This study provides novel objective evidence of substandard activity levels in patients with CP, with levels below the WHO recommendations for chronic disease.

Research on this topic is lacking and is urgently required. Specifically, habitual physical activity needs to be further characterised as well as an investigation of the putative benefits of exercise interventions.

References:

1. Monaghan, B, Monaghan, A, Mockler, D, Duggan SN, Conlon KC, Gormley J. Physical activity for chronic pancreatitis: A systematic review, HPB 2022, ISSN 1365-182X
2. WHO guidelines on physical activity and sedentary behaviour. Geneva: World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO.