



## Physical Exercise and Psychological Well-being

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### Introduction

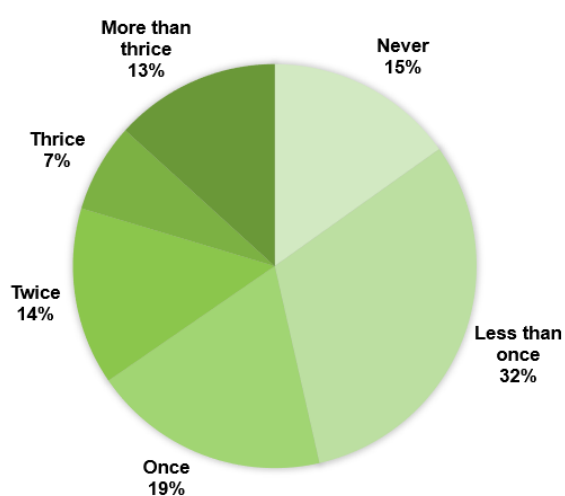
Ample literature has proposed the protective role of physical exercise on mental health and well-being (Anderson & Shivakumar, 2013; Anokye et al., 2012; Panza et al., 2019; Wicker & Frick, 2017). However, the effect of physical exercise on well-being is far from conclusive, the underlying mechanism is still unclear, and some mediators and moderators may intensively affect the effect (Schutte et al., 2017; Stubbe et al., 2007). The relationship between physical exercise and mood experience, as well as the association between mood experience and well-being has been well-documented (e.g., exercise may alleviate psychological distress, confusion, fatigue, tension, anger, and increase well-being; Bartholomew et al., 2005; Choi et al., 2019; Ekkekakis, 2015; Schuch et al., 2016; Szabo, 2003), we hence propose that mood experience may play a mediating effect between physical exercise and well-being. In addition, people practicing different types of sports have different feelings and mood experiences (Brand et al., 2020; Correia & Rosado, 2019), which may moderate the effect of exercise on well-being. Therefore, in the current study, we attempted to investigate how exercise frequency and type of sport affect mood experience and well-being, and explore the mediating effect of mood experience and the moderating effect of type of sport.

### Methods

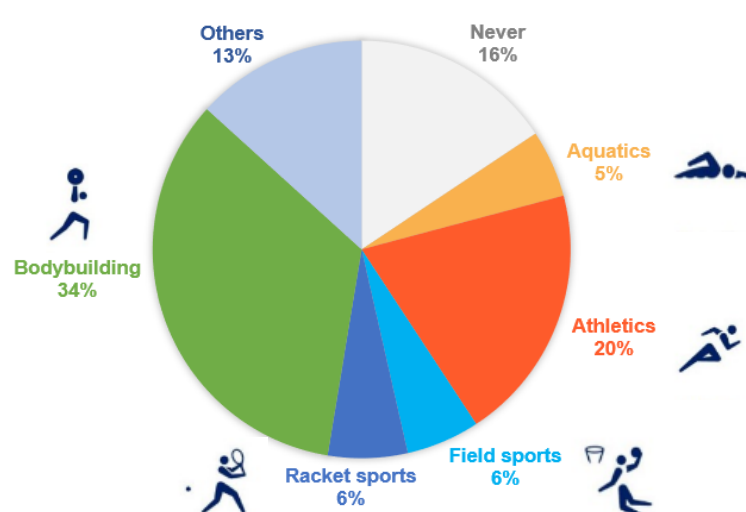
A survey was conducted among 211 Macao residents (69.1% female), aged between 22 to 74 years old ( $M = 30.4$ ,  $SD = 6.9$ ). Well-being was measured with the Psychological Flourishing Scale (Tong & Wang, 2017); mood experience was measured using the Scale of Positive and Negative Experience (Diener et al., 2010); and participants' exercise-related information (i.e., weekly exercise times and main type of sport) were collected.

### Results

#### Weekly Exercise Times



#### Main Type of Sport

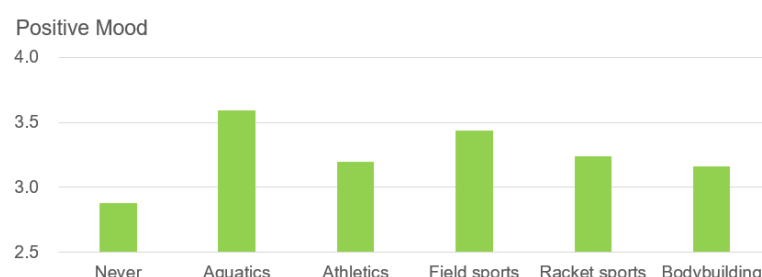
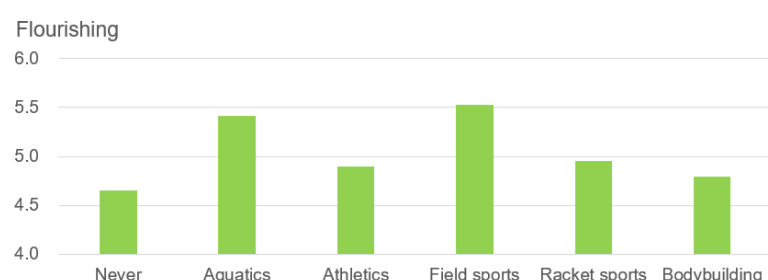


#### Type of Sport and Flourishing

#### Type of Sport and Positive Mood

- Type of sport is significantly related to psychological flourishing,  $F(6, 204) = 3.43$ ,  $p < .01$ .

- Type of sport is significantly related to positive mood experience,  $F(6, 204) = 3.62$ ,  $p < .01$ .

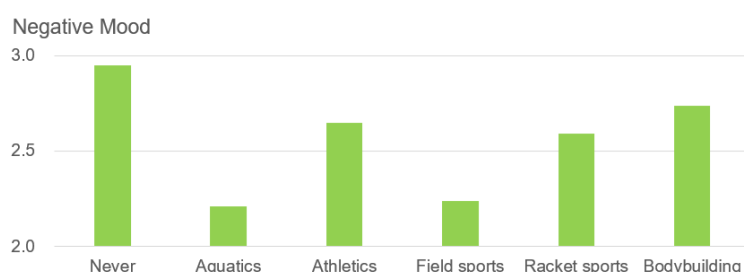


#### Type of Sport and Negative Mood

#### Mood Experience and Flourishing

- Type of sport is significantly related to negative mood experience,  $F(6, 204) = 3.75$ ,  $p < .01$ .

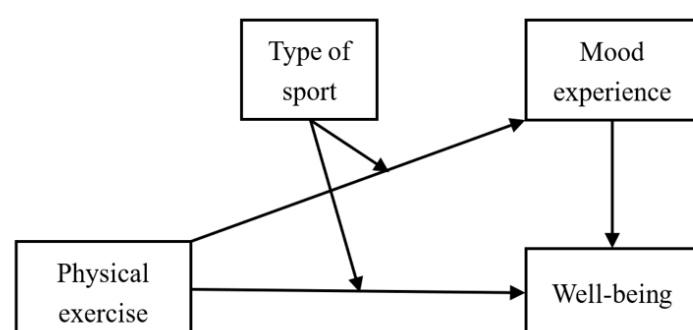
Regression analysis on mood experience and psychological flourishing ( $N = 211$ )



Predictor	$\beta$	B	95% CI		t
			Lower	Upper	
Step 1 (Constant)		4.49	3.99	4.99	17.88***
Gender	.02	.03	-.20	.25	.24
Age	-.12	.01	.00	.03	1.72
$\Delta R^2 = .01$ , $p > .05$					
Step 2 (Constant)		3.50	2.55	4.45	7.28***
Gender	-.06	-.10	-.28	.07	-1.17
Age	.01	.00	-.01	.01	.22
Positive Mood	.51	.65	.48	.83	7.53***
Negative Mood	-.20	-.25	-.41	-.08	-2.99***
$\Delta R^2 = .42$ , $p < .001$					

### Discussion

Type of sport was related to mood experience, and both positive and negative mood in turn affected psychological flourishing. Specifically, positive mood has a promoting effect on psychological flourishing, while negative mood has an inhibiting effect on psychological flourishing. In addition, different types of sport showed different effects on mood, implying a moderating effect. The findings of this study may contribute to explain the underlying mechanisms by which exercise affects mood and well-being, and provide new avenues for the intervention of mood disorders, such as practicing swimming and ball games to improve depressive symptoms.



A conjecture model of physical exercise and well-being