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Exercise Snacking – Your Future Exercise Trend

Exercise Snacking – Future Trend

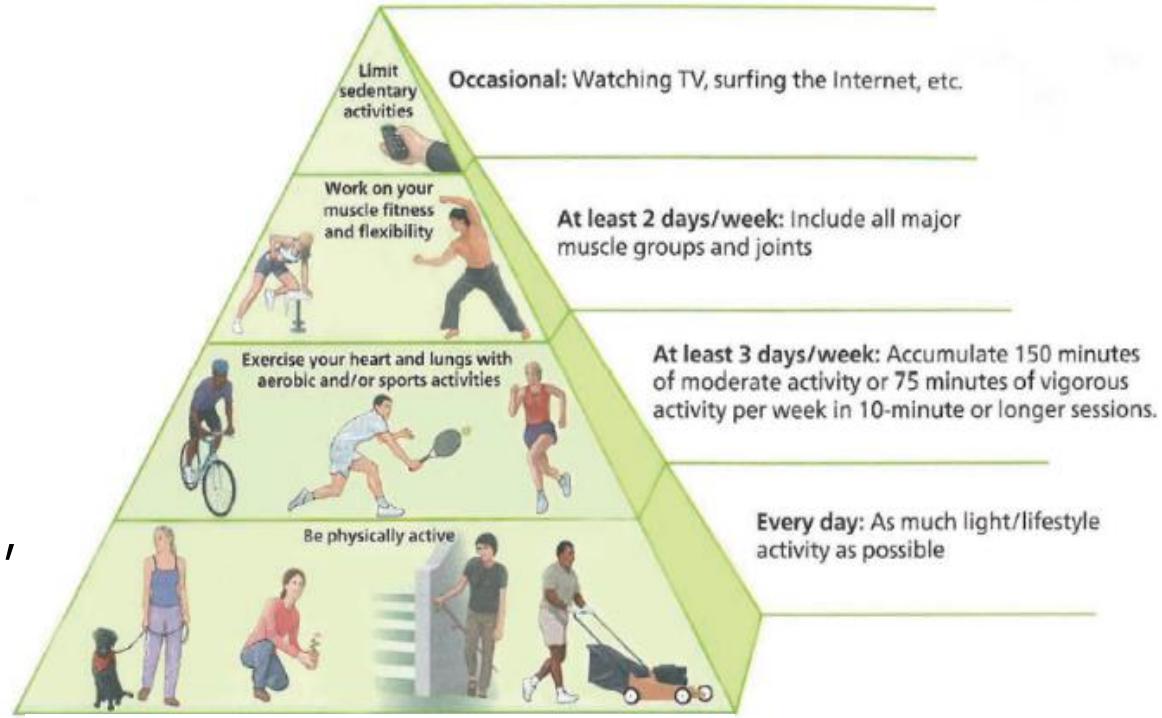
Sharing Parts

- What is Physical Activity (PA)?
- New definition of adequate PA under the WHO Guideline 2020
- The prevalence of physical inactivity
- Research findings of split exercises, outcome and its benefits
- Worldwide survey of fitness trends for 2021 by ACSM
- Stay active and healthy during COVID-19
- Tips for planning your exercise with lifelong activity

Exercise Snacking – Future Trend

Definition of Physical Activity (WHO)

- Any bodily movement produced by skeletal muscles that requires energy expenditure.
- All movements included during leisure time, for transport to get to and from places, or as part of a person's work.
- Popular ways to be active include walking, cycling, participating in sports and active recreation and play
- Activities that you enjoy



Physical Activity Pyramid for Optimal Health and Wellness

Exercise Snacking – Future Trend

What is “regular”?

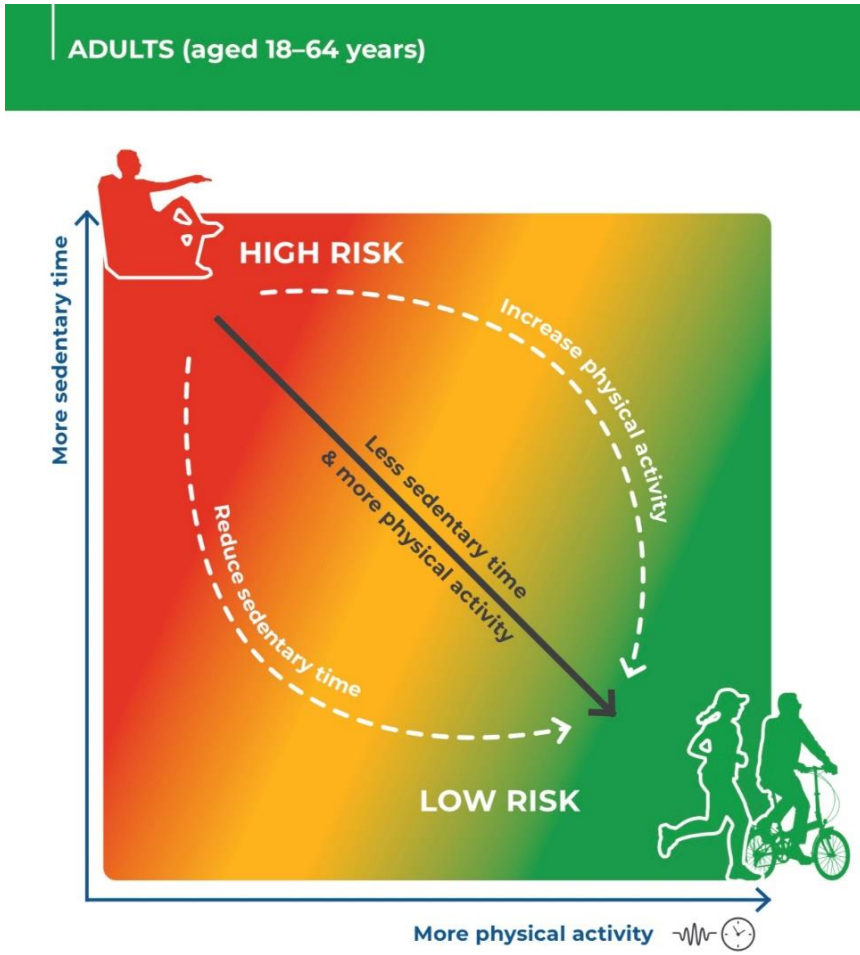
World Health Organization

- 75-150 minutes per week of vigorous intensity aerobic exercise
- 150-300 minutes per week of moderate intensity aerobic exercise

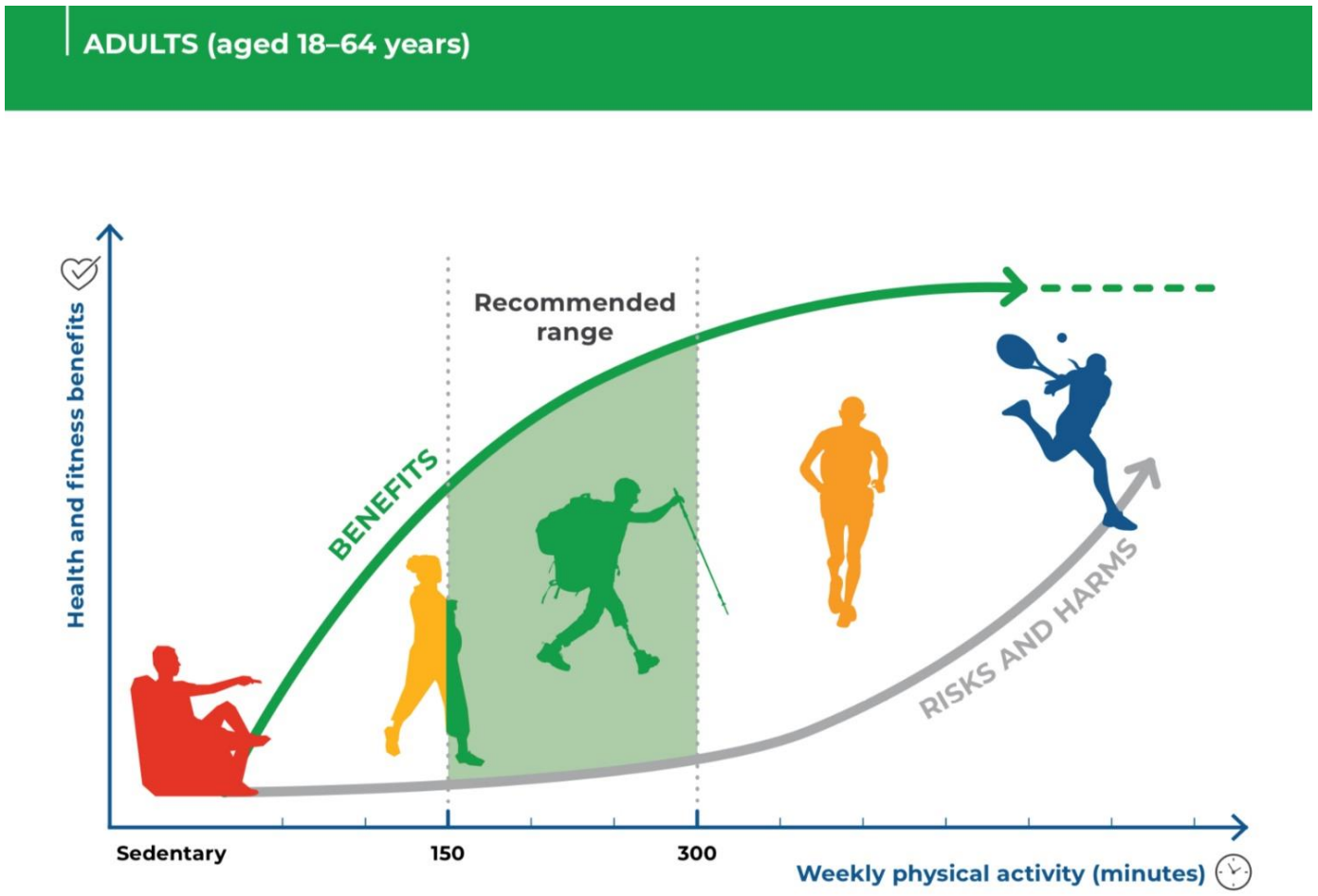
Frequency	Moderate intensity = 5 days/week Vigorous intensity = 2-3 days/week
Intensity	Moderate intensity = 5-6/10 RPE Vigorous intensity = 7-8/10 RPE about 60–80% of the maximum heart rate (MHR 220bpm – age)
Time	Moderate intensity = 150-300 minutes per week Vigorous intensity = 75-150 minutes per week *Aerobic exercises should be done in at least 10 min bouts
Type	Walking, Aquatic activities, cycling, group activities that will also promote social interaction

Exercise Snacking – Future Trend

Relationship between levels of sedentary behavior and physical activity, PAGAC, 2018



The Dose-response curve. Ekelund, U et al. British Medical Journal, 2019



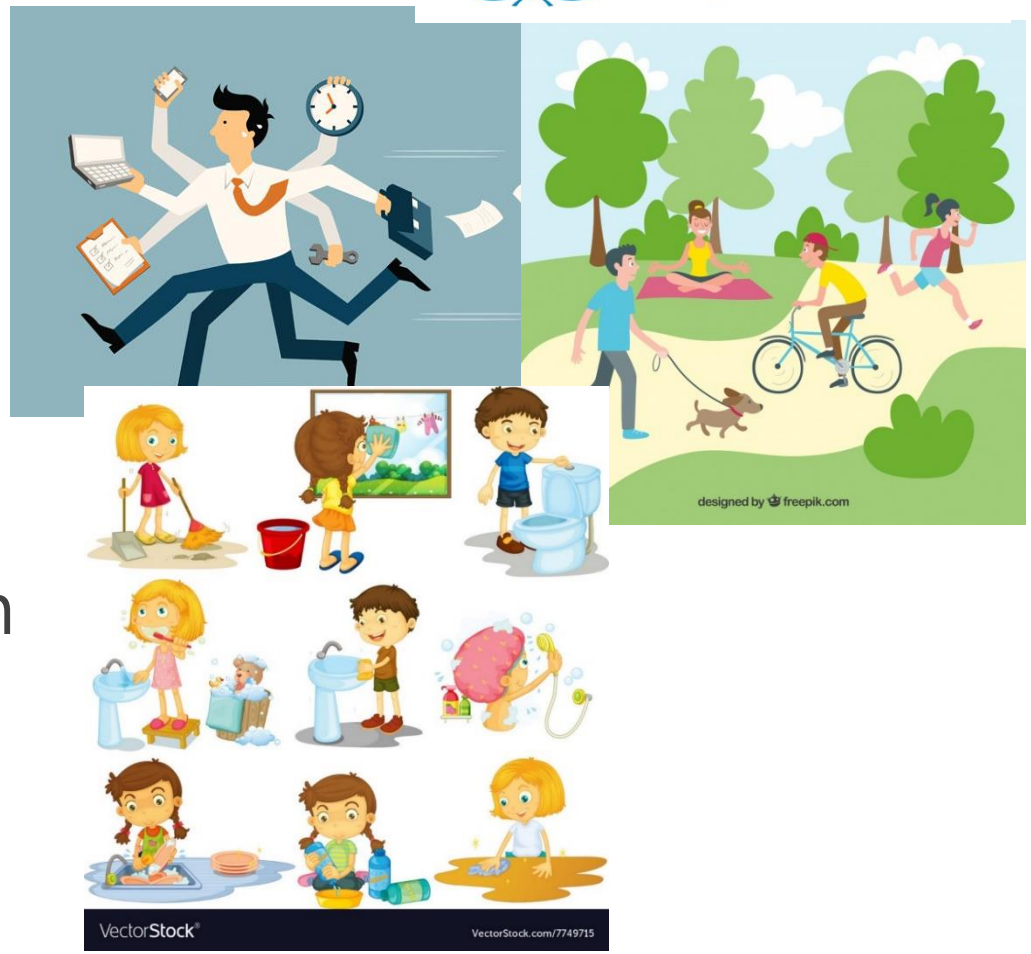
Exercise Snacking – Future Trend

The Prevalence of Physical Inactivity

World Health Organization

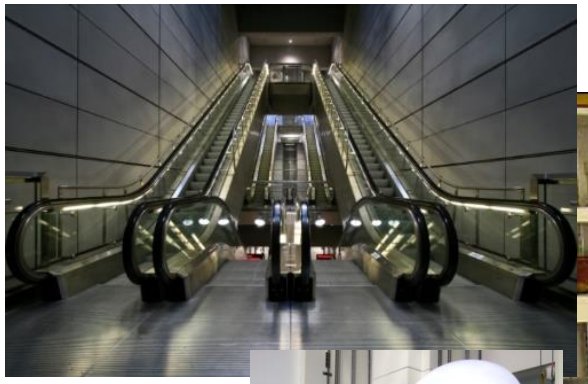
- More than a quarter of the world's adult population (1.4 billion adults) are insufficiently active

- Worldwide, around 1 in 3 women and 1 in 4 men do not have enough PA to stay healthy.



The Prevalence of Physical Inactivity

- The drop in PA is partly due to inaction during leisure time and sedentary behaviour on the job and at home.
- Likewise, an increase in the use of "passive" modes of transportation also contributes to insufficient PA.



Updated from WHO, November 2020

The Prevalence in Hong Kong

Physical inactivity pattern in adults (Aged 18 – 64), CUHK 2017

Level Achieved Recommendation by WHO	Male numbers (%)	Female numbers (%)	Total number (%)
Yes	964 (50.7%)	811 (37.4%)	1 775 (43.6%)
No	927 (48.8%)	1 350 (62.2%)	2 277 (55.9%)
Information lost	9 (0.5%)	10 (0.5%)	19 (0.5%)
Total	1 900 (100.0%)	2 171 (100.0%)	4 071 (100.0%)

- Less than 50% of the children and teenagers could achieved the standard of at least 1 hour of PA per day
- Sedentary behavior (screen time), only around 50% of the children and teenagers achieved the standard (Recommendation not more than 2 hours)

Global Ranking of Working Hours

CHINA DAILY ASIA

Wednesday, May 25, 2016, 18:10

HK has longest working week of 71 cities

By Shadow Li

Global ranking of working hours

Source: UBS Prizes and Earnings 2015

	Cities	Average weekly working hours	Annual paid vacation days
1	**Hong Kong**	**50.1**	**17**
2	Mumbai	43.8	21
3	Mexico City	43.5	17
4	New Delhi	42.6	26
5	Bangkok	42.1	9
6	Dubai	42.0	30
7	Nairobi	42.0	22
8	Taipei	41.2	13
9	Jakarta	40.4	12
10	Bogota	40.3	15
15	Tokyo	39.5	17
16	Shanghai	39.4	7
22	Beijing	37.8	10
71	Paris	30.8	29

The effect of standing

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PLOS | ONE

Minimal Intensity Physical Activity (Standing and Walking) of Longer Duration Improves Insulin Action and Plasma Lipids More than Shorter Periods of Moderate to Vigorous Exercise (Cycling) in Sedentary Subjects When Energy Expenditure Is Comparable

Bernard M. F. M. Duvivier[1,2], Nicolaas C. Schaper[1], Michelle A. Bremers[1], Glenn van Crombrugge[1], Paul P. C. A. Menheere[3], Marleen Kars[1], Hans H. C. M. Savelberg[2]*

1 Department of Internal Medicine, Maastricht University Medical Centre, Maastricht, The Netherlands, 2 Department of Human Movement Sciences, Maastricht University Medical Centre, Maastricht, The Netherlands, 3 Central Diagnostic Laboratory, Maastricht University Medical Centre, Maastricht, The Netherlands

Abstract

Background: Epidemiological studies suggest that excessive sitting time is associated with increased health risk, independent of the performance of exercise. We hypothesized that a daily bout of exercise cannot compensate the negative effects of inactivity during the rest of the day on insulin sensitivity and plasma lipids.

Methodology/Principal Findings: Eighteen healthy subjects, age 21±2 year, BMI 22.6±2.6 kgm^{-2} followed randomly three physical activity regimes for four days. Participants were instructed to sit 14 hr/day (sitting regime); to sit 13 hr/day and to substitute 1 hr of sitting with vigorous exercise 1 hr (exercise regime); to substitute 6 hrs sitting with 4 hr walking and 2 hr standing (minimal intensity physical activity (PA) regime). The sitting and exercise regime had comparable numbers of sitting hours; the exercise and minimal intensity PA regime had the same daily energy expenditure. PA was assessed continuously by an activity monitor (ActivPAL) and a diary. Measurements of insulin sensitivity (oral glucose tolerance test, OGTT) and plasma lipids were performed in the fasting state, the morning after the 4 days of each regime. In the sitting regime, daily energy expenditure was about 500 kcal lower than in both other regimes. Area under the curve for insulin during OGTT was significantly lower after the minimal intensity PA regime compared to both sitting and exercise regimes 6727.3±4329.4 vs 7752.0±3014.4 and 8320.4±5383.7 mU•min/ml, respectively. Triglycerides, non-HDL cholesterol and apolipoprotein B plasma levels improved significantly in the minimal intensity PA regime compared to sitting and showed non-significant trends for improvement compared to exercise.

Conclusions: One hour of daily physical exercise cannot compensate the negative effects of inactivity on insulin level and plasma lipids if the rest of the day is spent sitting. Reducing inactivity by increasing the time spent walking/standing is more effective than one hour of physical exercise, when energy expenditure is kept constant.

Compare 3 groups

	Sitting (hr/day)	Vigorous exercise (hr/day)	Walking +standing
1	14		
2	13	1	
3	8		4+2

↓ inactivity by ↑ time spent walking or standing → more effective than 1 hour of PA

→ shorten the time for sitting

The Exercise Snack

Jenkins, E. M., Nairn, L. N., Skelly, L. E., Little, J. P., & Gibala, M. J. (2019). Do stair climbing exercise "snacks" improve cardiorespiratory fitness?. Applied Physiology, Nutrition, and Metabolism, 44(6), 681-684.

Do stair climbing exercise "snacks" improve cardiorespiratory fitness?

E. Madison Jenkins, Leah N. Nairn, Lauren E. Skelly, Jonathan P. Little, and Martin J. Gibala

Abstract: We investigated the effect of stair climbing exercise "snacks" on peak oxygen uptake. Sedentary young adults were randomly assigned to perform 3 bouts/day of vigorously ascending a 3-flight stairwell (60 steps), separated by 1–4 h of recovery, 3 days/week for 6 weeks, or a nontraining control group (n = 12 each). Peak oxygen uptake was higher in the climbers after the intervention (P = 0.003), suggesting that stair climbing "snacks" are effective in improving cardiorespiratory fitness, although the absolute increase was modest.

Key words: sprint interval training, peak oxygen uptake.

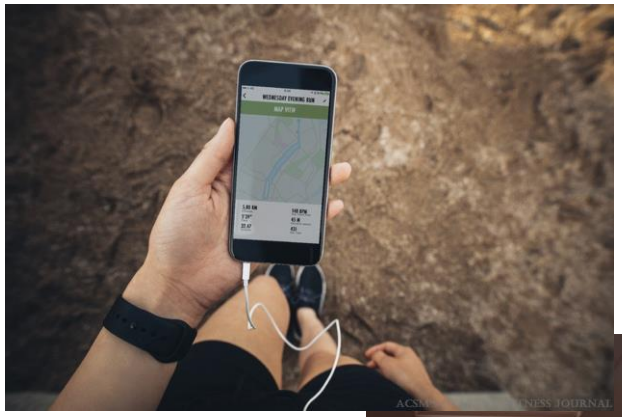
Résumé : Nous étudions l'effet des exercices courts et rapides de montée d'escaliers sur la consommation d'oxygène de pointe. De jeunes adultes sédentaires sont répartis de façon aléatoire dans un groupe expérimental pour effectuer trois séances/jour de montées vigoureuses dans une cage d'escalier à trois volées (60 marches), intercalées de 1–4 h de récupération, 3 jours/semaine pendant 6 semaines ou à un groupe de contrôle sans entraînement (n = 12 chacun). La consommation d'oxygène de pointe est plus élevé chez les monteurs d'escalier après l'intervention (P = 0,003), ce qui suggère que les montées brèves et rapides des escaliers sont efficaces pour améliorer la condition cardiorespiratoire, bien que l'augmentation absolue soit modeste. [Traduit par la Rédaction]

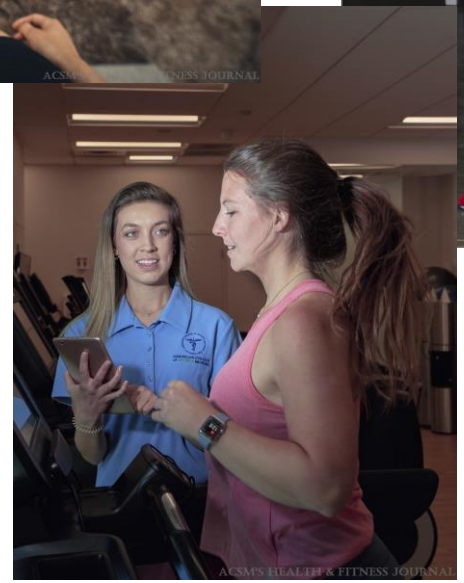
Mots-clés : entraînement par intervalles de sprint, consommation d'oxygène de pointe.

WORLDWIDE SURVEY OF FITNESS TRENDS FOR 2020

Rank	Trend
1	Wearable technology
2	High intensity interval training (HIIT)
3	Group training
4	Training with free weights
5	Personal training
6	Exercise is Medicine (EIM)
7	Body weight training
8	Fitness programs for older adults
9	Health/wellness coaching
10	Employing certified fitness professionals
11	Exercise for weight loss
12	Functional fitness training
13	Outdoor activities
14	Yoga
15	Licensure for fitness professionals
16	Lifestyle medicine
17	Circuit training
18	Worksite health promotion and workplace well-being programs
19	Outcome measurements
20	Children and exercise

ACSM'S HEALTH & FITNESS JOURNAL





WORLDWIDE SURVEY OF FITNESS TRENDS FOR 2020

Thompson, Walter R. ACSM's Health & Fitness Journal23(6):10-18, November/December 2019.

COVID-19 pandemic alters fitness programming in 2021

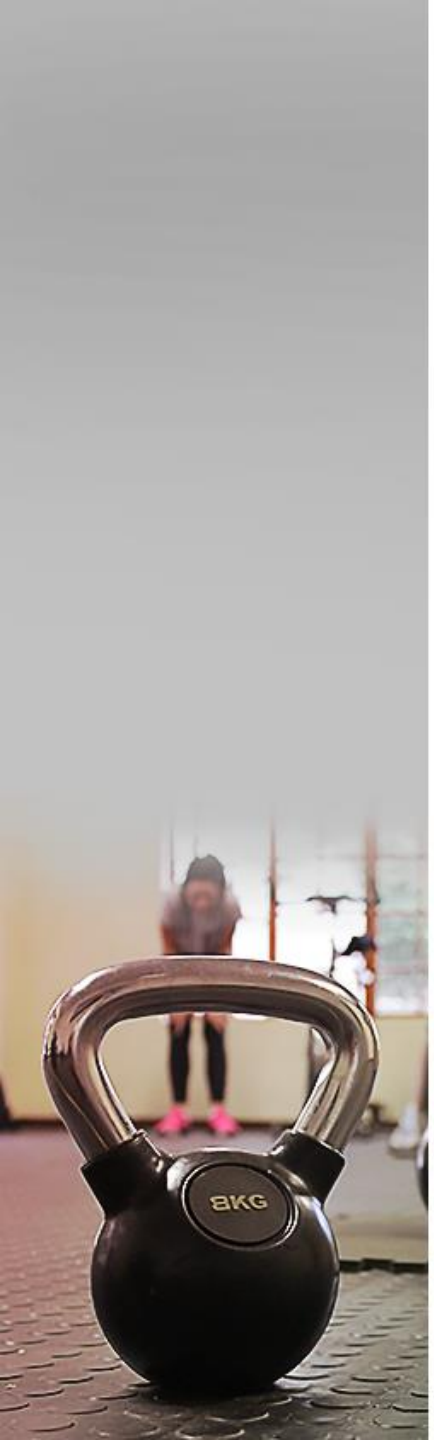
[Worldwide Survey of Fitness Trends for 2021]

Thompson, Walter R.
ACSM's Health & Fitness Journal25(1):10-19, January/February 2021

TABLE 2 - Top 20 Worldwide Fitness Trends for 2021

Rank	Top 20 Worldwide Fitness Trends for 2021
1	Online training
2	Wearable technology
3	Body weight training
4	Outdoor activities
5	HIIT
6	Virtual training
7	Exercise is Medicine
8	Strength training with free weights
9	Fitness programs for older adults
10	Personal training
11	Health/wellness coaching
12	Mobile exercise apps
13	Employing certified fitness professionals
14	Functional fitness training
15	Yoga
16	Exercise for weight loss
17	Group training
18	Lifestyle medicine
19	Licensure for fitness professionals
20	Outcome measurements

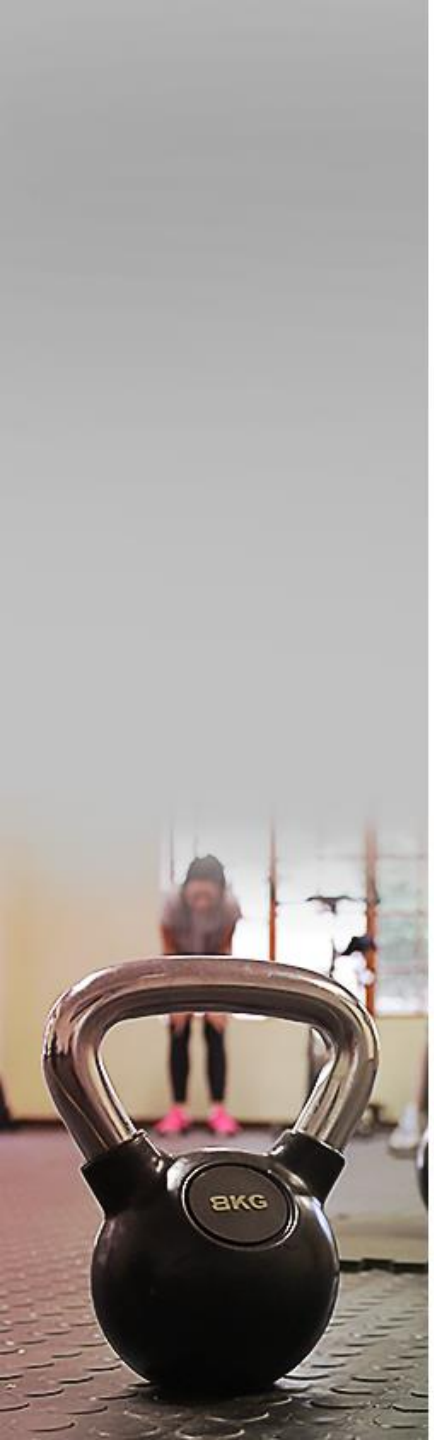
EIM, Exercise is medicine; HIIT, High intensity interval training.



Comparison between last few years and 2021

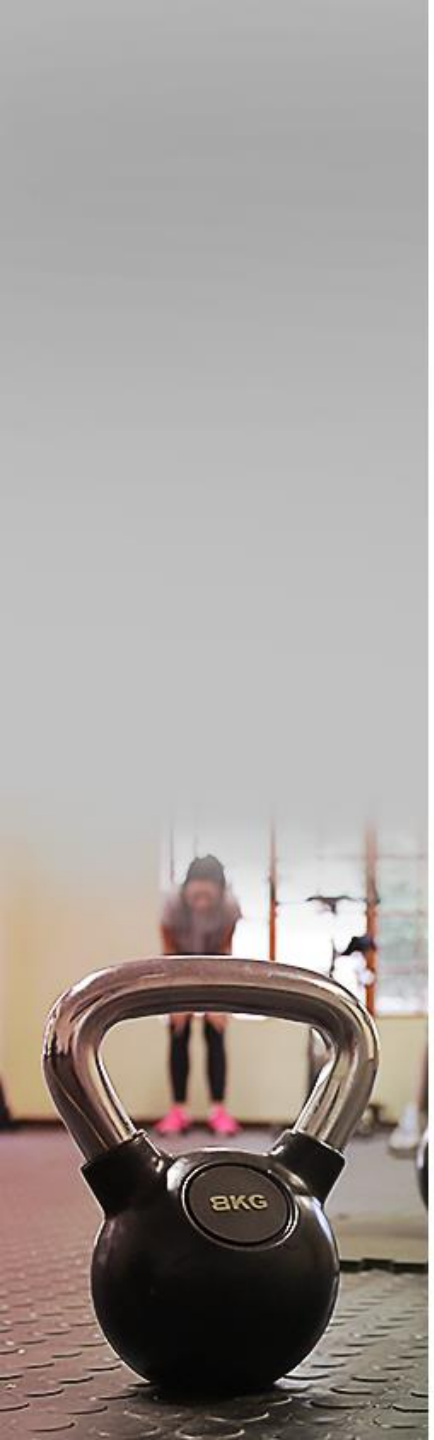
- Online training went from the no. 26 (trend in 2020) to no. 1 (trend in 2021) ➔ shift in the market from clubs to homes as a result of the COVID-19 Pandemic

- Wearable technology took over the no. 1 (in 2019 and 2020); and no. 2 for 2021

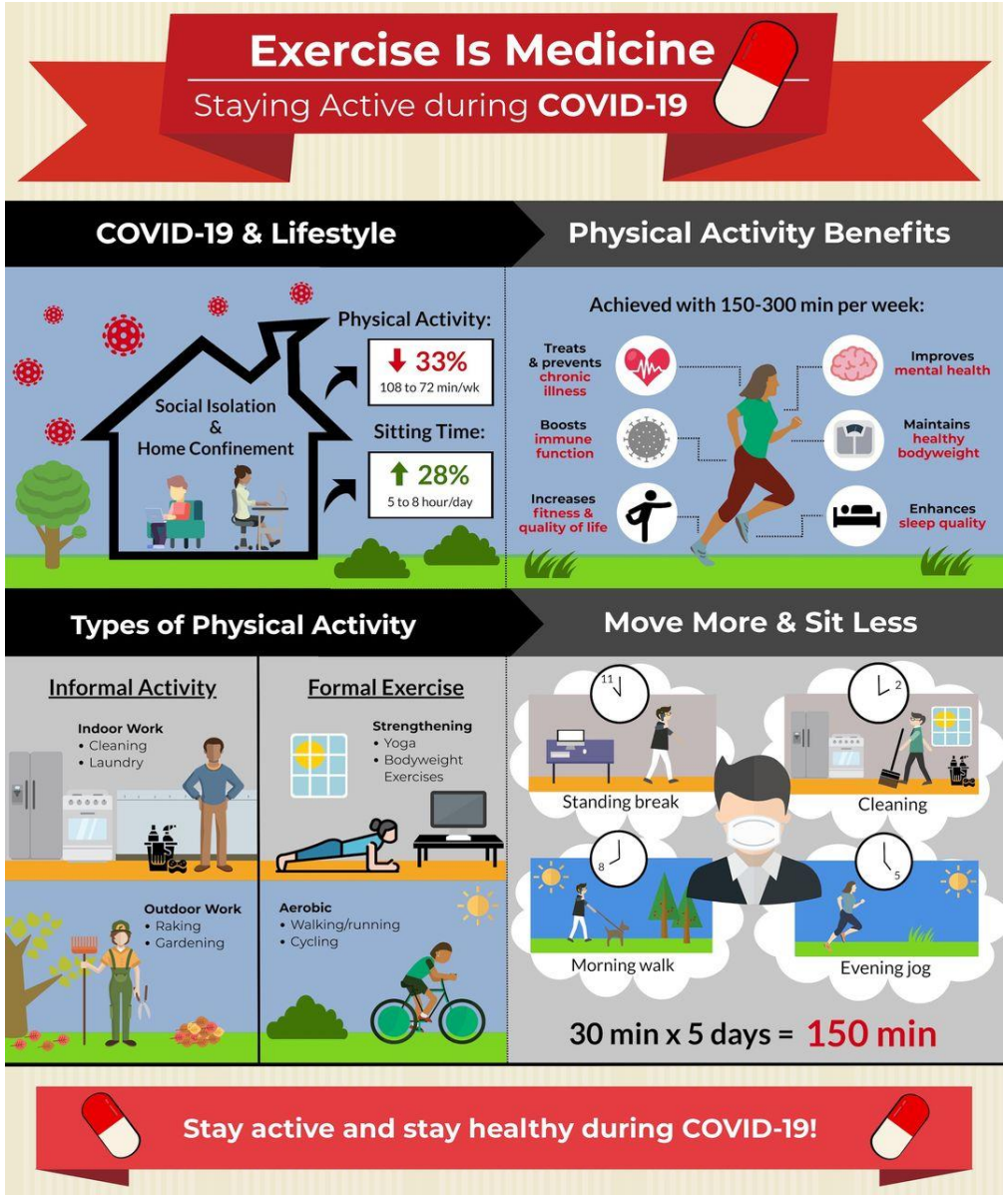


Comparison between last few years and 2021

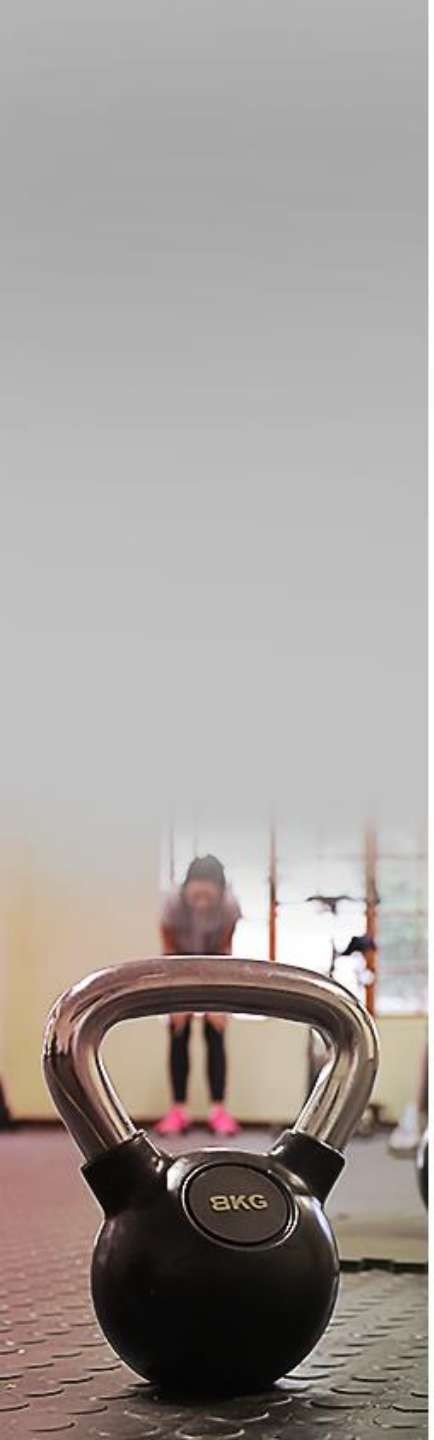
- Group training ↓ significant from no. 3 in 2020 to no. 17 trend ↓ for 2021
- Body weight training, ↑ from no. 7 in 2020 to no. 3 in 2021
- High Intensity Interval Training (HIIT), remained high in no. 2 in 2020 ; now no. 5 in 2021



New Trend – COVID-19



Wedig IJ, Duelge TA, Elmer SJ, (2020). Infographic. Stay physically active during COVID-19 with exercise as medicine. *British Journal of Sports Medicine.*



The Prevalence of in Hong Kong

Research from The Hong Kong Anti-Cancer Society

- Order of take away with red meat and too much oil
- Around 35% of respondents gained weight of 3.6kg on average
- Around 70% of the respondents altered their habit of PA and dietary intake
- Around 50% of the respondents reduced their frequency of PA by only 0.8 time per week

防癌會調查：疫下三成半受訪者增磅3.6公斤 (14:41)

Mingpao New in Dec 2020

Plan for Your Exercise

- Follow your own living pattern
- Morning exercise is more preferable for me
- Better to do before meal (before lunch or dinner)
- Light exercise at night time (before sleep)

Review Article

Morning and evening exercise

Dae Yun Seo[a], *SungRyul Lee*[a], *Nari Kim*[a], *Kyung Soo Ko*[a], *Byoung Doo Rhee*[a], *Byung Joo Park*[b], *Jin Han*[a,*]

[a] National Research Laboratory for Mitochondrial Signaling, Department of Physiology, College of Medicine, Cardiovascular and Metabolic Disease Center, Inje University, Busan, Korea
[b] Division of Leisure and Sports Science, Dong Seo University, Busan, Korea

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ABSTRACT

A growing body of evidence suggests that exercise may contribute to preventing pathological changes, treating multiple chronic diseases, and reducing mortality and morbidity ratios. Scientific evidence moreover shows that exercise plays a key role in improving health-related physical fitness components and hormone function. Regular exercise training is one of the few strategies that has been strictly adapted in healthy individuals and in athletes. However, time-dependent exercise has different outcomes, based on the exercise type, duration, and hormone adaptation. In the present review, we therefore briefly describe the type, duration, and adaptation of exercise performed in the morning and evening. In addition, we discuss the clinical considerations and indications for exercise training.

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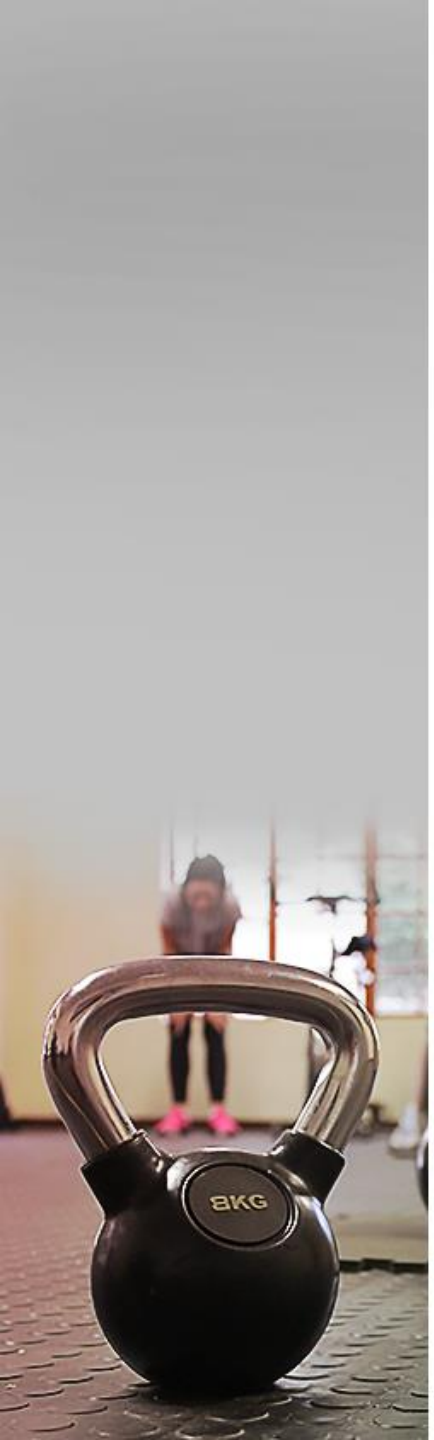
Appetite control and exercise: Does the timing of exercise play a role?

ABSTRACT

The prevention and management of chronic diseases, particularly overweight and obesity, relies on multidisciplinary strategies mainly combining dietary approaches with physical activity. Recently, the timing of exercise (time of the day as well as delay/position relative to a meal) has been suggested as an important parameter to consider when prescribing physical activity. Some studies have for instance shown the interest of the timing of exercise on the glycemia, sleep and body composition regulation. However, the impact of exercise-timing on appetite control and energy intake remains unclear. This is why, the present paper questions whether physical exercise, depending on its timing during the day and related to a meal, can affect energy intake, appetite sensations and food reward. Although evidences remain actually limited, exercising during the morning; and particularly close to lunch, might have a better impact on overall energy balance through reduced subsequent energy intake, without leading to compensatory intakes at the following meals. Importantly, dealing with the timing of exercise to optimize energy balance (and affect energy intake and appetite) does not only require to consider its time during the day (morning vs. afternoon or evening), but also and maybe mainly its order/position (pre vs. post) and delay regarding meals. While the actual literature remains limited in this area, the present paper tends to highlight the importance of considering the timing of exercise to optimize our impact on the overall energy balance, and to encourage the elaboration of further studies to better understand and determine the potential effect of this timing of exercise, in order to find the best combination between the different exercise characteristics, intensity, duration, modality, to empower these effects.



THANK YOU