Fitness Fads

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Disclosures

- I have no relevant financial disclosures.

Objectives

- Identify the top fitness trends of 2023
- Assess the potential possibilities and limitations of wearable technology
- Establish a framework for fitness that includes cardio, resistance training, interval training and functional fitness

Where did fitness go in 2023?

- ACSM Annual Survey of Fitness Trends
  - Global survey, sent to 125K people
    - Medical professionals, academics and fitness industry members
  - 17th consecutive year
- Trend *vs.* Fad

2023 Fitness Trends

1	Wearable technology
2	Strength training with free weights
3	Body weight resistance training
4	Fitness programs for older adults
5	Functional fitness programs
6	Outdoor activities
7	HIIT
8	Exercise for weight loss
9	Employing certified fitness professionals
10	Personal training

2023 Fitness Trends

Continued…

11	Core training
12	Circuit training
13	Home exercise gyms
14	Group exercise training
15	“Exercise is Medicine”
16	Lifestyle medicine
17	Yoga
18	Licensure for Fitness Professionals
19	Health/well-being coaching
20	Mobile exercise apps

2023 Fitness Trends

Noteworthy trends

- "Post" Covid-19: less isolation
  - Home exercise gyms dropped from #2 (2022) to #13 (2023)
  - Online live and on-demand exercises class: #1 (2021) to #9 (2022) to #21 (2023)
- "Back to Basics": practicing physical activity anywhere, and at low cost
  - Free weights (#2), body weight (#3), core training (#11), circuit training (#12)
- Holistic health: thinking about different populations, settings, and goals for fitness activities
  - Fitness for older adults (#4), functional fitness (#5), outdoor activities (#6), exercise for weight loss (#8)

2023 Fitness Trends

US Trends

	1	2	3	4	5
2023	Wearable Technology	Strength Training with Free Weights	Body Weight Training	Fitness Programs for Older Adults	Outdoor Activities
2022	Wearable Technology	Home Exercise Gyms	Outdoor Activities	Strength Training with Free Weights	Exercise for Weight Loss
2021	Online Training	Wearable Technology	Body Weight Training	Outdoor Activities	HIIT

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2023 Fitness Trends

Global Trends

	Australia	Brazil	Europe	Mexico	Portugal	Spain	United States
1	Fitness Programs for Older Adults	Personal Training	Body Weight Training	Exercise and weight loss programs	Licensure for Fitness Professionals	Functional fitness training	Wearable Technology
2	Functional Fitness Training	Exercise for Weight Loss	Exercise for Weight Loss	Personal training	Employing Certified Fitness Professionals	Small group personal training	Strength Training
3	Strength Training with Free Weights	Fitness Programs for Older Adults	Personal Training	Functional training	Personal Training	Personal training	Body Weight Training
4	Group Exercise Training	Functional Fitness Training	Fitness Programs for Older Adults	Aerobic Training	Exercise for Weight Loss	Employing certified professionals	Fitness Programs for Older Adults
5	Employing Registered Exercise Professionals	Body Weight Training	Functional Fitness Training	Specific Training for a Sport	Lifestyle Medicine	Free-weight strength training	Outdoor Activities
6	Wearable Technology	Strength Training with Free Weights	HIIT	Outdoor Fitness activities	Health/Well-being Coaching	Exercise and weight loss	Functional Fitness Training
7	Pilates	Employing Certified Fitness Professionals	Boutique Fitness Studios	Exercise Programs for Children and Teens	Exercise is Medicine (EIM)	Fitness programs for older adults	HIIT
8	Outdoor Activities	Outdoor Activities	Circuit Training	Body Weight Training	Strength Training with Free Weights	Multidisciplinary work teams	Exercise for Weight Loss
9	Personal Training	Lifestyle Medicine	Exercise is Medicine (EIM)	Healthy Diet	Outcome Measurements	Licensure for fitness professionals	Employing Certified Fitness Professionals
10	Body Weight Training	HIIT	Employing Certified Fitness Professionals	Multidisciplinary Work Teams	Outdoor Activities	Outdoor activities	Personal Training

EIM, Exercise is Medicine; HIIT, high-intensity interval training.

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Wearable Tech

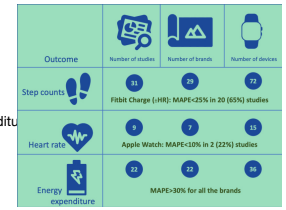
A persistent trend

- #1 fitness trend in 2019, 2020, 2022 & 2023
  - #2 in 2021 (Covid)
- But does it work?
  - Constantly evolving devices make research more challenging

Wearable Tech

Reliability

- Fitbit Charge/Fitbit HR - Step count
- Apple Watch - Heart rate
- None accurate in measuring energy expenditu
- Sleep data lacking



MAPE: MEAN ABSOLUTE PERCENTAGE ERROR

- Germini F, Noronha N, Borg Debono V, Abraham Philip B, Pete D, Navarro T, Keepanasseril A, Parpia S, de Wit K, Iorio A. Accuracy and Acceptability of Wrist-Wearable Activity-Tracking Devices: Systematic Review of the Literature. *J Med Internet Res*. 2022 Jan 21;24(1)

Wearable Tech

Weight loss

- "There is conflicting evidence about the effectiveness of adding a wearable device to intensive lifestyle interventions for weight loss." (AFP systematic review 2018)
  - Weak evidence that wearable tech can improve weight loss outcomes, but not necessarily more so than comparator methods (JMIR, 2020)
  - Short term (<6 months) weight loss interventions using wearable tech and weight loss intervention were better than standard weight loss program in middle age or older adults
    - Effect was not shown with younger adults (J Sports Med Phys Fitness, 2018)
- For those who are overweight/obese and with chronic medical conditions, demonstrable BMI reduction improvement with consumer-grade wearable devices
  - However, improvement is not necessarily better than using accelerometer/pedometer (BJSM systematic review, 2021)

Wearable Tech

Sedentary time

- Evidence for assessing effects on sedentary time and physical activity are more sparse
  - Few RCTs exist
  - Studies frequently confounded by having multiple interventions (or different interventions that make it difficult to do a systematic review)
- "Step-count monitoring leads to short- and long-term increases, with no evidence that body-worn trackers/smartphone applications…offer further benefit over simpler pedometer-based interventions." (Int J Behav Nutr Pays Act 2020, systematic review/meta-analysis)
- Accuracy matters!
  - Study designed to give accurate, inflated and decreased step count feedback to participants (JMIR 2023)
  - Accurate step count group perceived activity as more adequate and healthier; + changes to diet and mental health
  - Those exposed to deflated step counts perceived activity as more inadequate, ate more unhealthily, more negative affect/ mental health
  - Inflated step counts did not change outcomes compared with accurate step counts

Wearable Tech

Pitfalls

- Wearable technology may not lead to sustainable motivation
  - Novelty wears off for many
  - Tracking study: after 6 months, 40% decrease in usage; after 1 year, only 10% were still wearing devices (Lancet Diab & Endo 2016)
  - Trackers + focusing on positive effects of movement can help reinforce and internalize well-being (ACSM Health & Fitness 2017)
- Counter-productive for younger patients?
  - Adolescents given trackers and enrolled in "leaderboard" fitness challenge: **decreased motivation after 8 weeks** (AJHE 2017)
    - Motivated more by competition/guilt in early stages; felt more physically inept and lazy if they did not hit 10K steps/day)
  - Young adults BMI 25-40: adding fitness tracker to a standard behavioral intervention resulted in less weight loss over 24 months (JAMA 2016)
- For maximal impact in health space, need to address:
  - Digital inequality and selection bias
  - Privacy issues with researchers accessing data (data collection tools)

Strength Training

Free-weight & Body-weight training

- Free weights (barbells, kettlebells, dumbbells, medicine ball, *etc.*)
- HICT
  - Positive effects on BMI, insulin sensitivity and VO2 max (ACSM 2013)
- BJSM cohort study of 416K US adults, adjusted for demographic factors and chronic medical conditions (2022)
  - 1 hr moderate-vigorous aerobic exercise/week: 15% lower mortality risk
  - 3 hrs moderate-vigorous aerobic exercise/week: 27% lower mortality risk
  - 1-2 strength training sessions/week: **40% lower mortality risk**
    - Difference between nonsmoker and 1/2 ppd habit

Broadening the Scope

Fitness programs for older adults; functional fitness

- Seeing longer life expectancy, *but* decrease in life expectancy free of disease or functional impairment (Gerontology, 2011)
  - Living longer, unhealthier lives (muscle mass, BMD, VO2max + chronic medical conditions)
- Multiple studies showing physical activity in early midlife, retirement age, and elderly is safe and effective
  - Regular physical activity in early midlife reduces likelihood of physical functional limitations later in midlife (Med Sci Sports & Exer 2017)
  - Energy-restricted diet alone may contribute to sarcopenic obesity in persons near retirement age (Adv Nutr 2023)
    - Most effective strategies were energy restriction + resistance training, or mixed exercise + high protein
  - High velocity resistance training with low external resistance equaled muscle power and physical performance gains with high external resistance training in mobility-limited elders (J Gerontol A Bill Sci Med Sci 2015)
  - Important to design RT routines with appropriate training period, intensity, time under tension and rest between sets (Sports Med 2015)

Making exercise “fit”

High-intensity interval training (HIIT)/Sprint interval training (SIT)

- Classic guidelines: 150-175 minutes of moderate-vigorous physical every week
  - Volume can seem insurmountable to many
  - Recognition that exercising 1-2x/week is better than no exercise
- Desire to get more “bang for the buck” (same exercise benefits from less time)

HIIT/SIT

Benefits

- Compared to 150-175 minutes/week guidelines, HIIT exercises (5-20 minute workout) are more efficient
- Multiple studies have identified positive effects of HIIT, more favorable compared to moderate continuous training
  - Skeletal muscles, risk factors, vasculature, respiration, anatomic function, cardiac function, exercise capacity, inflammation, quality of life, physiologic markers including VO2max (World J Cardio 2019 systematic review)
- HIIT and MICT have similar effects on quality of life and mental health in patients with CVD; HIIT better for self-perceived physiologic functioning (Sci Rep 2023)
- HIIT with similar, if not greater improvements in VO2max and other performance and health variables compared with continuous aerobic training. (Sports Med 2015 SR/MA)
- HIIT is safe and appears more effective than MICT for improving cardiorespiratory fitness in patients with CVD (Front Cardiovascular Med 2022 SR/MA)
- 7-minute workout positively affected nutritional status and waist circumference in normal weight individuals (J Sports Med Phys Fitness 2017)

HIIT/SIT

Potential drawbacks

- High dropout rate
- Doing it too much may be detrimental (overtraining)
  - Doing HIIT 5 times/week (152 minutes) led to sudden & severe decline in mitochondrial function, along with disturbance in glucose tolerance and insulin secretion; body did recover but slowly (Cell Metab 2021)
- Some effects may be transient
  - *Not* exercising for 5-6 days per week means the body does not see cardio metabolic benefit on the off days (e.g., glycemic regulation better on days that participants exercised) (Med Sci Sports Exer 2021)
- Appropriate protocol recommendations for different patient populations and target groups
  - Insufficient evidence on how HIIT effects are influenced by different demographic factors, as well as pediatric populations and specific disease populations; current research has focused significantly more on males than females.
- Variability in designing different types of HIIT programs
  - Which are most effective, and which have highest adherence?
- Lack of RCTs focusing on medical endpoints
  - Mortality and medical outcomes are less studied than short-term effects.
- Technology?
  - How might HIIT programs partner with wearable technology? (J Cain Med 2022)

2024 and Beyond

Where are we headed?

- Biometric data
  - How do we collect it (accurately and safely)?
  - What do we do with it?
  - Is it useful?
- Augmented reality/virtual reality
  - Outcomes?
- Holistic approach
  - Mental health as part of fitness
  - Different subpopulations, recognizing barriers

Conclusions

- Leading fitness trends are both high-tech (wearables & smart devices) and “back-to-basics” (free weights, body weights, outdoor activities, functional fitness)
- Ultimately, effective fitness centers on what maximizes adherence/sustains motivation
- We need to evolve to more inclusive models of what fitness looks like
- Recognize the difference between life expectancy, and *healthy* life expectancy

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