2022년 대한임상건강증진학회

추계학술대회

신체활동량 증진을 위한 웨어러블 디바이스 활용 방안

박세정(한국스포츠정책과학원)

대한임상건강증진학회
Korean Society for Health Promotion and Disease Prevention

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신체활동의 다양한 이점

건강, 사회, 경제적 편익 제공

환경 보호

World Health Organization, 2018

신체활동 선택 → 필수

전 세계인의 사망 위험요인 4위

Risk factor	Deaths (millions)	Percentage of total
World		

신체활동 부족

(physical inactivity)으로 인해

체력 수준에 따른 의료비 차이

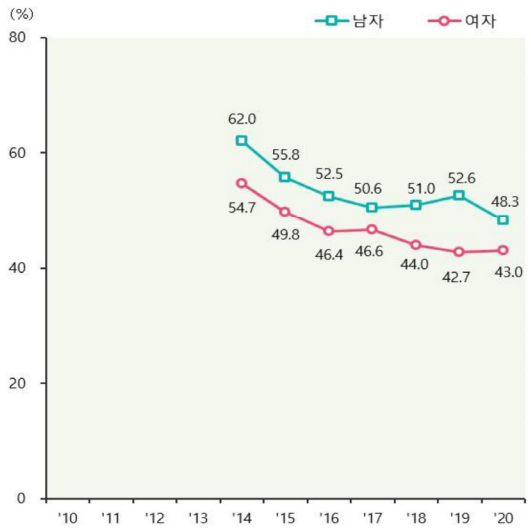
Table 4. The association between the levels of cardiorespiratory fitness and healthcare utilization and costs in the next year

Variables	Group	N	Total				Inpatient				Outpatient			
			Mean	SD	beta	p	Mean	SD	beta	p	Mean	SD	beta	p
Number of visits	Low risk	877	12.58	13.50	1		0.10	0.36	1		12.49	13.38	1	
	Middle risk	660	14.20	15.66	0.686	.315	0.15	0.59	0.050	.070	14.05	15.50	0.641	.348
	High risk	243	17.94	17.94	2.890	.003*	0.22	0.63	0.118	.002*	17.72	17.74	2.804	.008*
Visit days	Low risk	877	12.98	14.25	1		0.50	2.46	1		12.48	13.39	1	
	Middle risk	660	14.84	16.81	0.920	.224	0.80	3.58	0.259	.126	14.04	15.50	0.635	.347
	High risk	243	18.78	19.51	3.177	.003*	1.07	3.70	0.479	.044*	17.72	17.74	2.807	.008*
Treatment days	Low risk	877	15.89	29.23	1		1.02	4.41	1		14.87	28.24	1	
	Middle risk	660	19.25	33.79	3.052	.029*	1.69	6.93	0.649	.052	17.56	31.37	2.422	.055
	High risk	243	29.41	59.95	4.534	.021*	2.47	8.37	1.363	.004*	26.94	58.16	3.372	.057
Prescription days	Low risk	877	111.98	178.82	1		-	-	-	-	-	-	-	-
	Middle risk	660	146.48	193.57	6.710	.274	-	-	-	-	-	-	-	-
	High risk	243	173.86	210.48	27.215	.002*	-	-	-	-	-	-	-	-
Healthcare costs	Low risk	877	394,067	709,350	1		69,510	296,071	1		312,899	553,224	1	
	Middle risk	660	556,456	1,395,995	173,016	.006*	201,468	592,750	85,765	.030*	392,686	775,676	85,644	.012*
	High risk	243	780,783	1,811,269	324,840	<.001*	271,017	758,425	197,087	<.001*	503,624	1,218,951	114,520	.016*

Adjusted for BMI, income, healthcare utilization and healthcare costs in the previous year by multiple linear regression.
*p<.05, **p<.01.

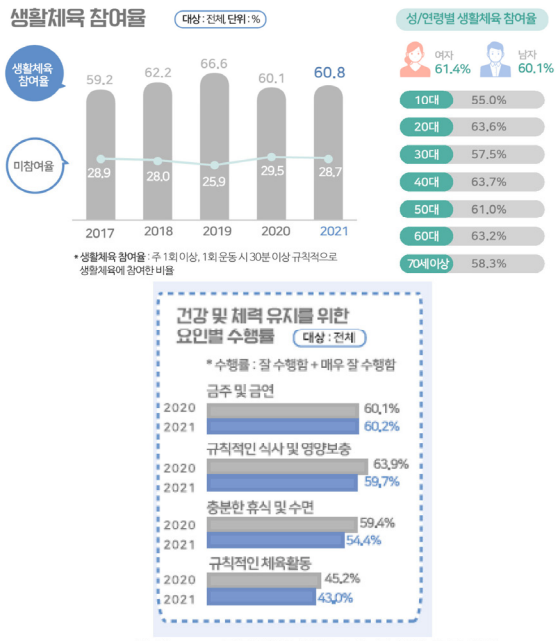
이승희, 이효진, 오인환, 정현경, 이미현, 박세정(Exercise Science 2021)

우리 국민의 유산소 신체활동 실천량 추이



출처: 2020 국민건강통계(보건복지부, 질병관리본부, 2022)

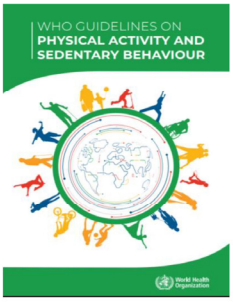
※ 유산소 신체활동 실천율 : 일주일에 중강도 신체활동을 2시간 30분 이상 또는 고강도 신체활동을 1시간 15분 이상 또는 중강도와 고강도 신체활동을 섞어서(고강도 1분은 중강도 2분) 각 활동에 상당하는 시간을 실천한 분율
만19세 이상 2005년 추계인구로 연령표준화



출처: 2021국민생활체육조사(문화체육관광부)

운동의 건강 이점

- 고혈압, 제2형 당뇨병, 고지혈증↓
- 비만, 고혈압, 고지혈증 관련 위험요인↓
- 체력(심폐 능력, 근력 & 근지구력)
- **치매↓, 우울, 불안↓**
- **인지 기능↑**
- **수면↑**
- 일상생활에서 기능적 능력↑, 삶의 질↑
- 뼈 건강, 체중관리
- 넘어짐 또는 넘어짐 손상↓
- **관절염 통증↓**



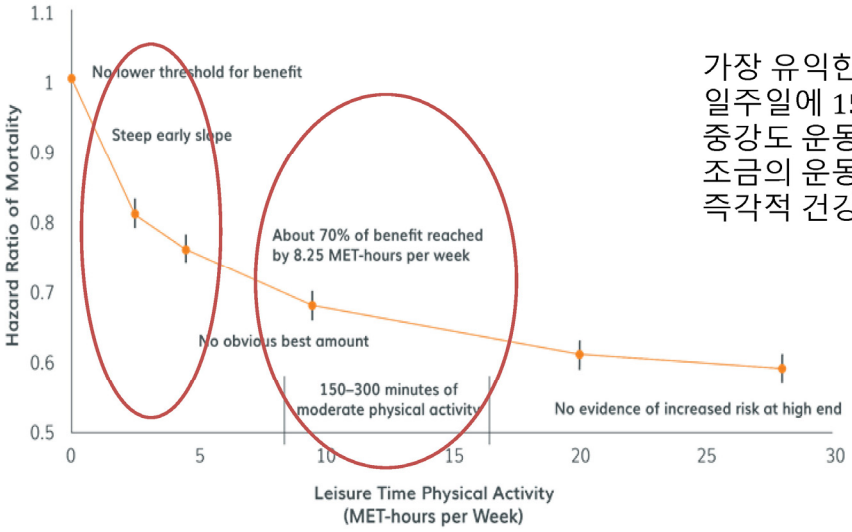
Move More and Sit Less

https://edition.cnn.com/cnn-underscored/electronics/apple-watch-activity

Moderate-to-Vigorous Physical Activity
Risk of all-cause mortality decreases as one moves from red to green.

(U.S. Department of Health and Human Services, 2018)

건강관리(사망률) 감소를 위한 운동량



가장 유익한 운동량:
일주일에 150-300분
중강도 운동
조금의 운동도 유익
즉각적 건강 이득

(U.S. Department of Health and Human Services, 2018)

건강관리를 위한 운동 인포그래픽

신체활동 참여 증진을 위한 중재 방법

- Leisure-time physical activity

ICT can be employed in interventions emanating from the other levels impact

2018 Physical Activity Guidelines Advisory Committee Scientific Report

Physical Activity since COVID-19 Onset

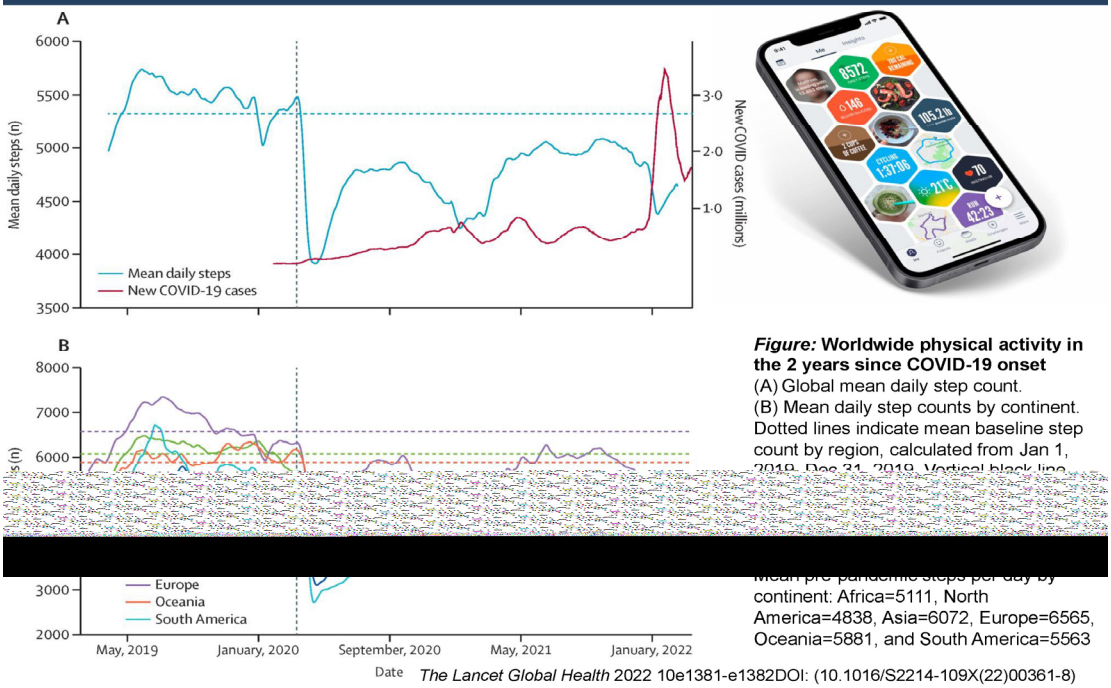
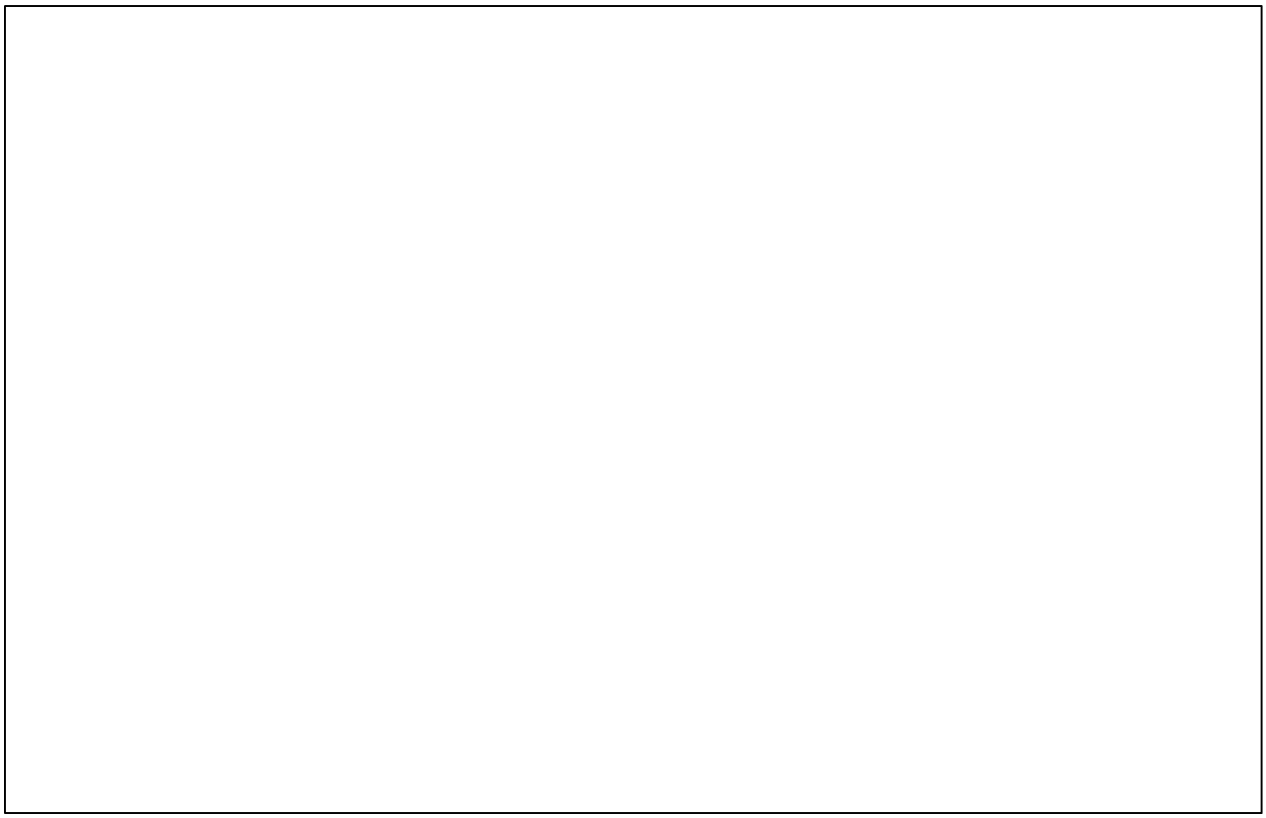
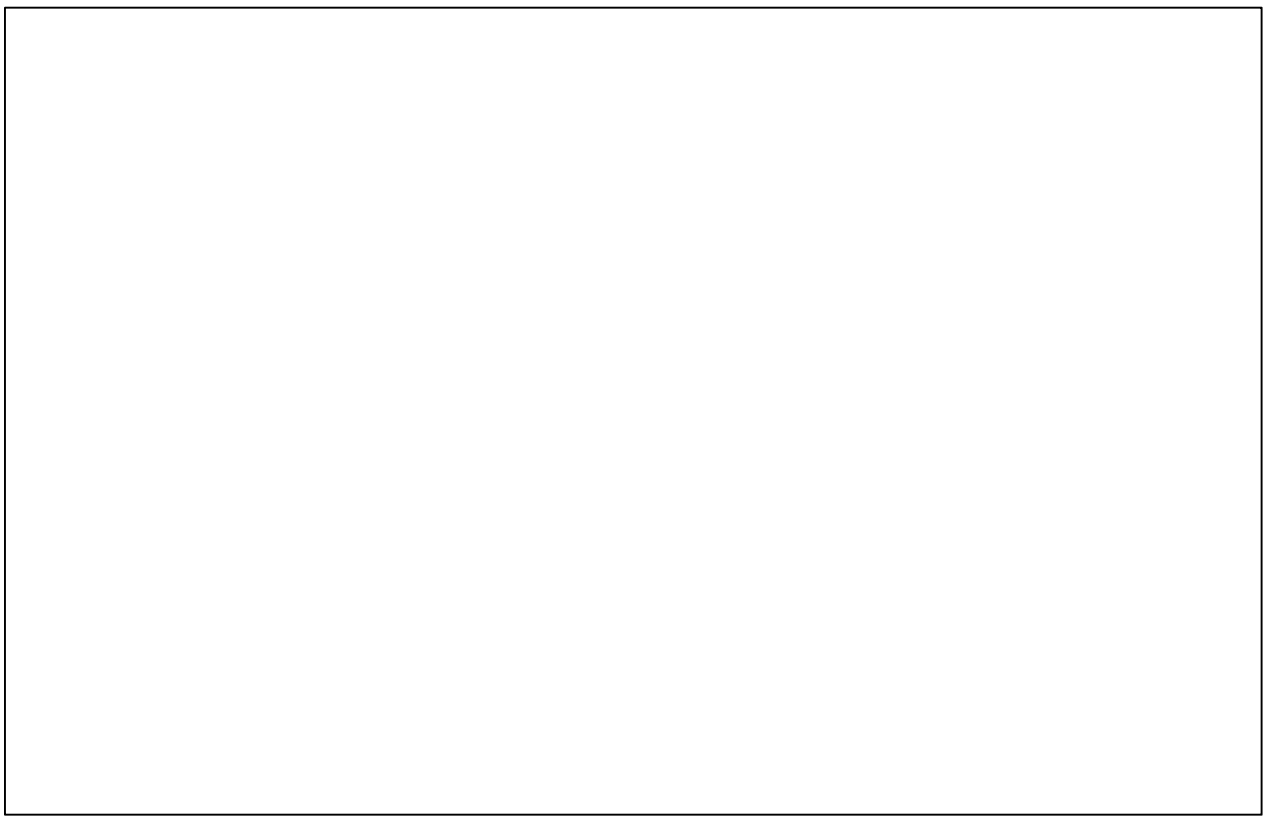


Figure: **Worldwide physical activity in the 2 years since COVID-19 onset**
(A) Global mean daily step count.
(B) Mean daily step counts by continent.
Dotted lines indicate mean baseline step count by region, calculated from Jan 1, 2019–Dec 31, 2019. Vertical black line

continent: Africa=5111, North America=4838, Asia=6072, Europe=6565, Oceania=5881, and South America=5563

The Lancet Global Health 2022 10e1381-e1382DOI: (10.1016/S2214-109X(22)00361-8)





Circulation

AHA SCIENTIFIC STATEMENT

Supporting Physical Activity in Patients and Populations

				balance, aerobic, and muscle-strengthening activities
Estimated minimal number of steps per day from wearable activity monitors‡	≥10 000 steps/d	≥10 000 steps/d	≥7000 steps/d	≥7000 steps/d

*Adults with chronic health conditions or disabilities, who are able, should follow the same recommendations as adults/older adults. When adults with chronic conditions or disabilities are not able to meet these guidelines, they should engage in regular physical activity according to their abilities and should avoid inactivity.[3]

†Pregnant and postpartum women should do at least 150 minutes of moderate-intensity aerobic activity. Vigorous-intensity activity can be performed if habitually engaged in pre-pregnancy.[4]

‡Steps per day estimations are based on preliminary research findings based on norm-referenced assessment of how many steps would be equivalent to the recommended amounts of moderate-vigorous physical activity and are not a part of the 2018 Physical Activity Guidelines.[6–7]

요 약

- 신체활동량 증가를 위한 웨어러블 기기 활용
  - 최근 다수의 과학적 근거 제시
- 신체활동 증가를 위한 웨어러블 기기 활용 시 고려사항
  - 제품 및 변인의 정확도(걸음수, 심박수 등)
  - 결과 지표 선정(신체활동량 , 운동시간 등)
  - 혈압, 체중, 혈중 지질 등 건강 변인
  - 추가 사항 : 목표설정 및 행동전략 접목 등