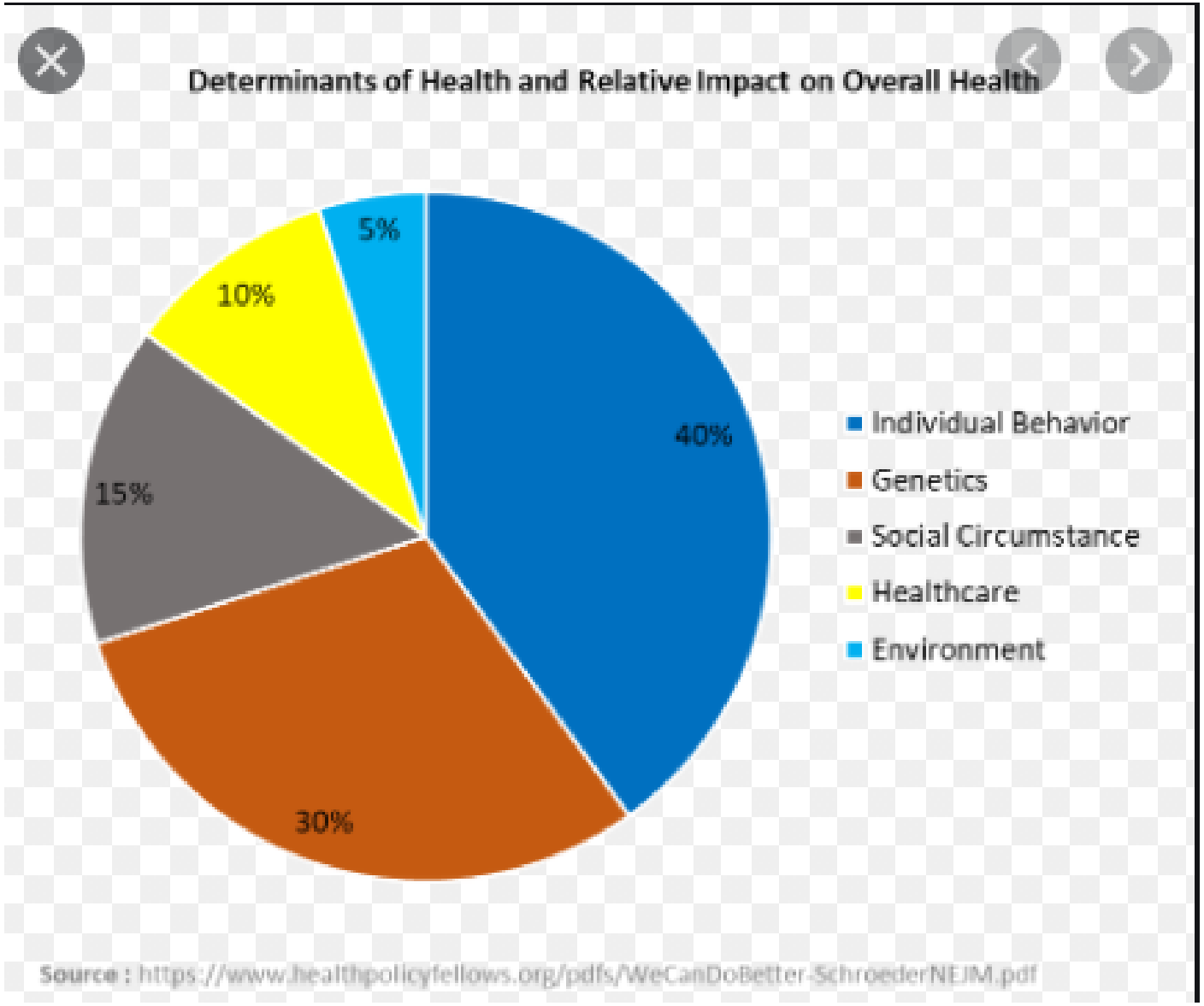
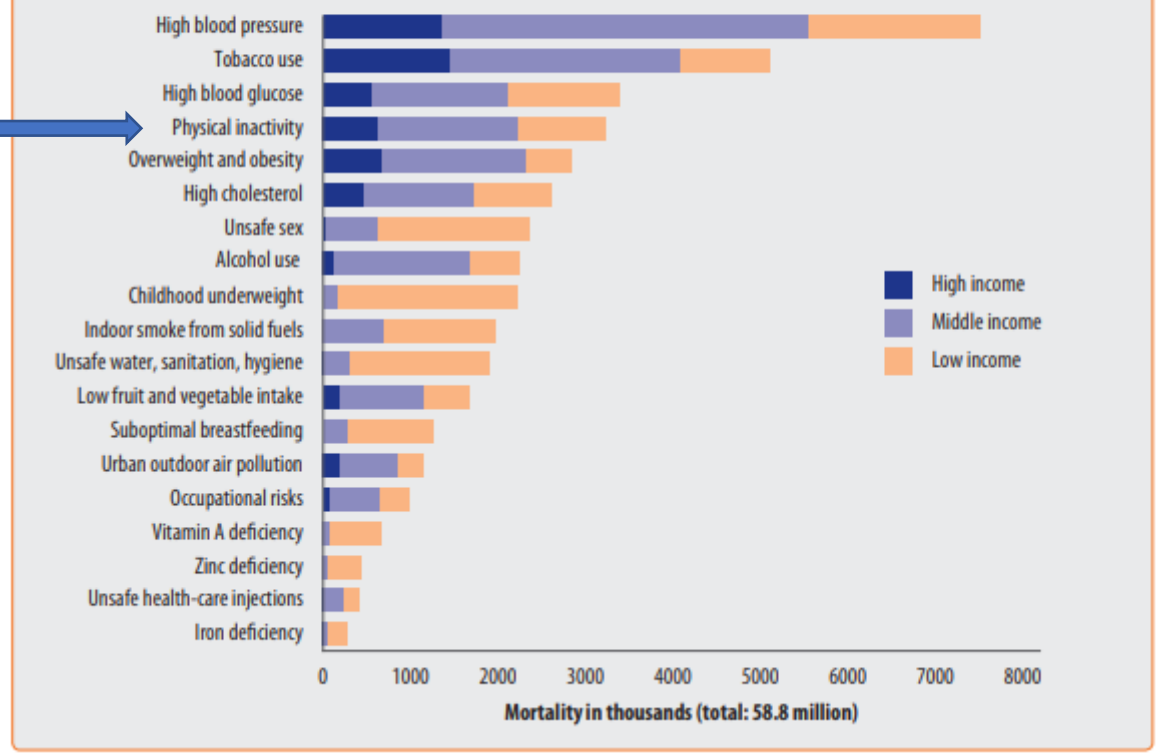
# Ávísun á hreyfingu - Hreyfiseðlar

Jón Steinar Jónsson


Determinants of Health and Relative Impact on Overall Health
40%
30%
15%
10%
5%
Individual Behavior
Genetics
Social Circumstance
Healthcare
Environment
Source : https://www.healthpolicyfellows.org/pdfs/WeCanDoBetter-SchroederNEJM.pdf

## World Health Organization

**Figure 6: Deaths attributed to 19 leading risk factors, by country income level, 2004.**



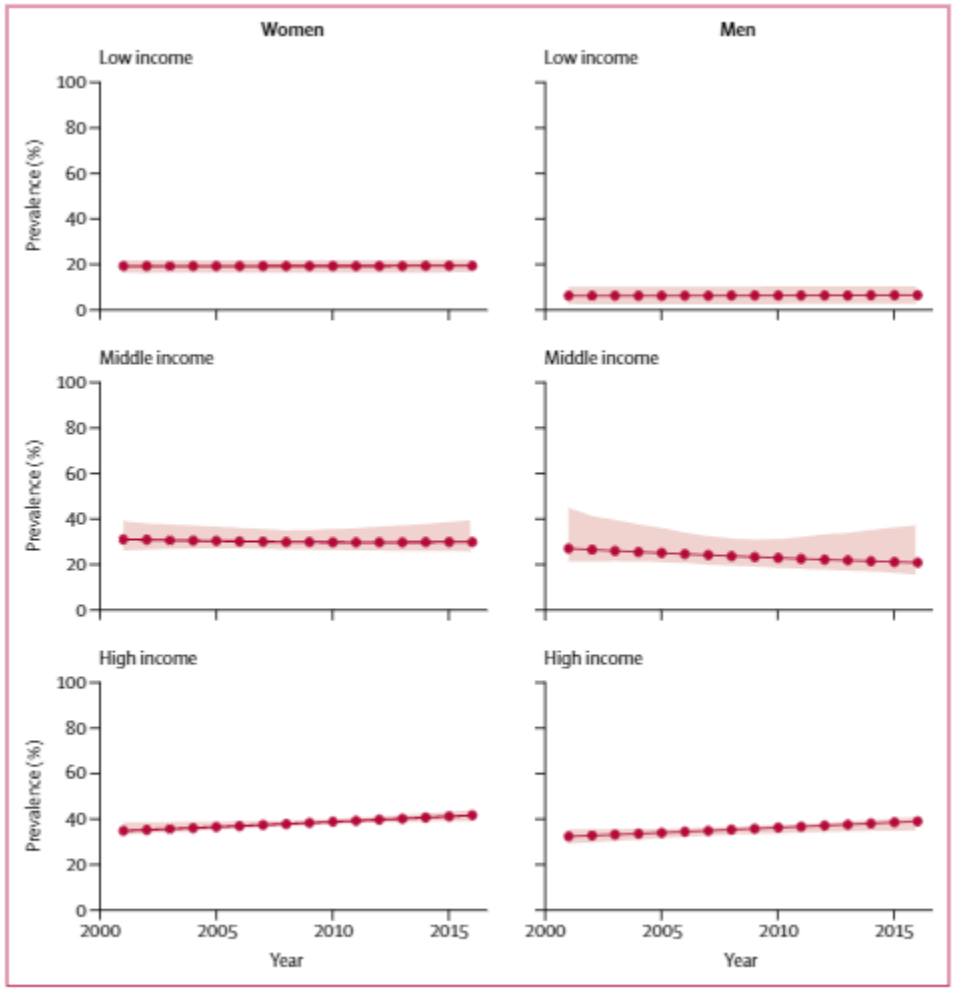
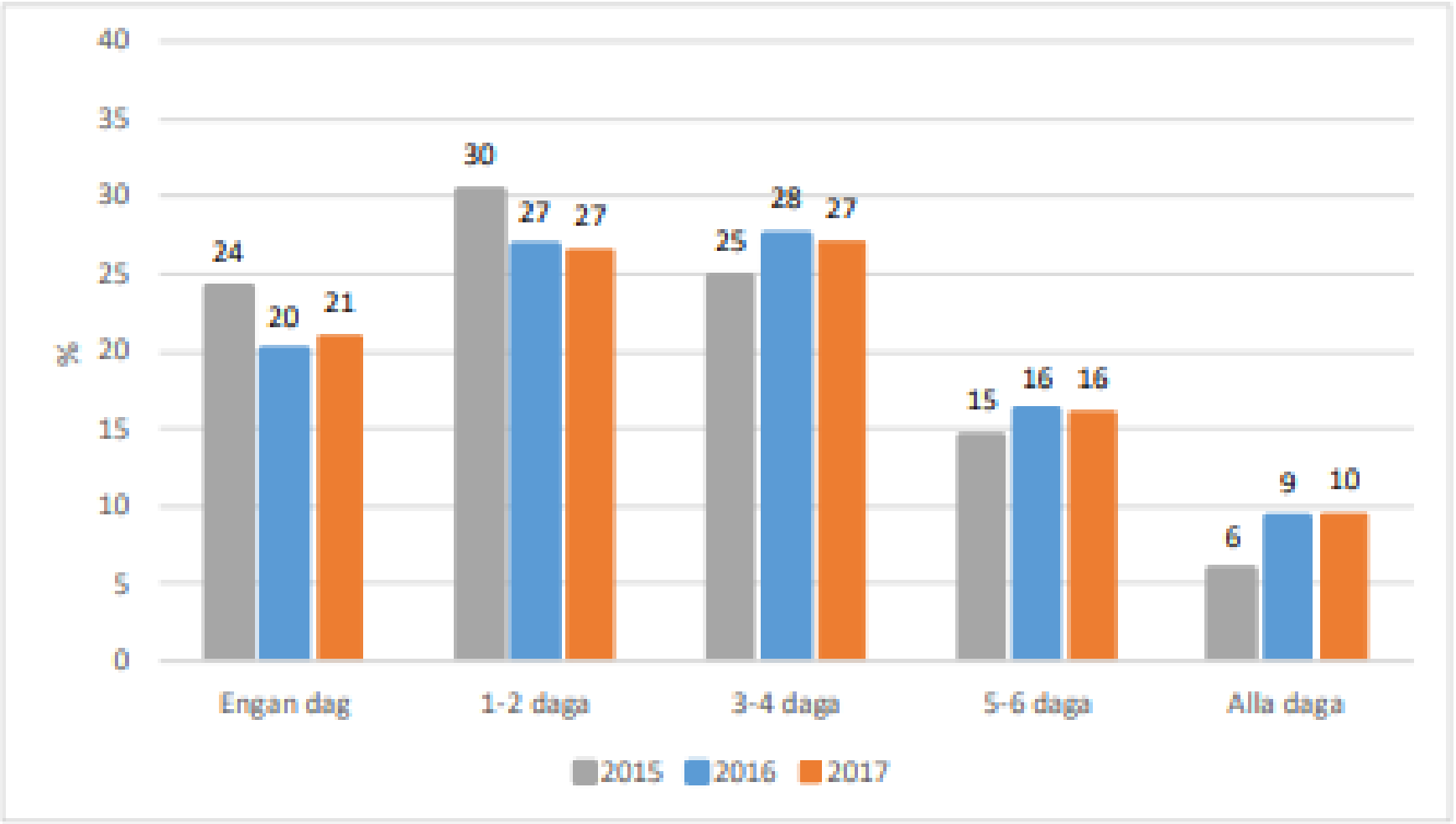



***Figure 3:*** **Trends in insufficient physical activity for three income groups from 2001 to 2016**
The shaded areas show 95% uncertainty intervals.




**Mynd 6**. Hlutfall fullorðinna sem hreyfa sig rösklega í samtals ≥30 mín./dag síðastliðna viku, 2015, 2016 og 2017.

THE LANCET
Volume 262, Issue 6795, 21 November 1953, Pages 1053-1057
Originally published as Volume 2, Issue 6795

ORIGINAL ARTICLES

# CORONARY HEART-DISEASE AND PHYSICAL ACTIVITY OF WORK

J.N. Morris M.A. Glasg., M.R.C.P., D.P.H.[a], J.A. Heady M.A. Oxf.[a], P.A.B. Raffle M.D. Lond., D.P.H., D.I.H.[a], C.G. Roberts B.A., M.D. Camb.[a], J.W. Parks M.B.E., M.D. Camb., D.C.H.[a]

Jeremy N. Morris in 1954

Dr. Morris surmised that the proof could be found on the stairs of those double-decker buses. In 1949, he began tracing the heart-attack rates of hundreds of drivers and conductors. The drivers sat for 90 percent of their shifts; the conductors climbed about 600 stairs each working day. Dr. Morris's data, published in 1953, indicated that the conductors had fewer than half the heart attacks of their sedentary colleagues.

In a follow-up study, Dr. Morris found that a lower incidence of heart attack among people doing physical work was not, for the most part, related to other factors, like body type. Transport for London, the city's transportation agency, provided him with the sizes of the trousers it supplied to its workers. His data indicated that the conductors' waistbands were smaller, but that their protection against heart attack could not be explained by their relative leanness. They had a lower risk of heart attack whether they were slim, average size or portly.

To corroborate his findings further, Dr. Morris did a study of postal workers. Comparing those who delivered the mail by walking or riding bicycles with the clerks behind the window at the post office and the telephone operators, he found that the deliverers also had a far lower risk of heart attack.

Then, in the 1960s, Dr. Morris conducted an eight-year study of the overall physical activity of 18,000 men in sedentary civil service jobs. The data showed that those who engaged in regular aerobic exercise — fast walking, cycling, swimming or other sports — reduced their risk of heart attack by half.2012

Jón Steinar Jónsson febr 2012

# Health benefits of physical activity: the evidence

CMAJ · MARCH 14, 2006 · 174(6)

Darren E.R. Warburton, Crystal Whitney Nicol, Shannon S.D. Bredin

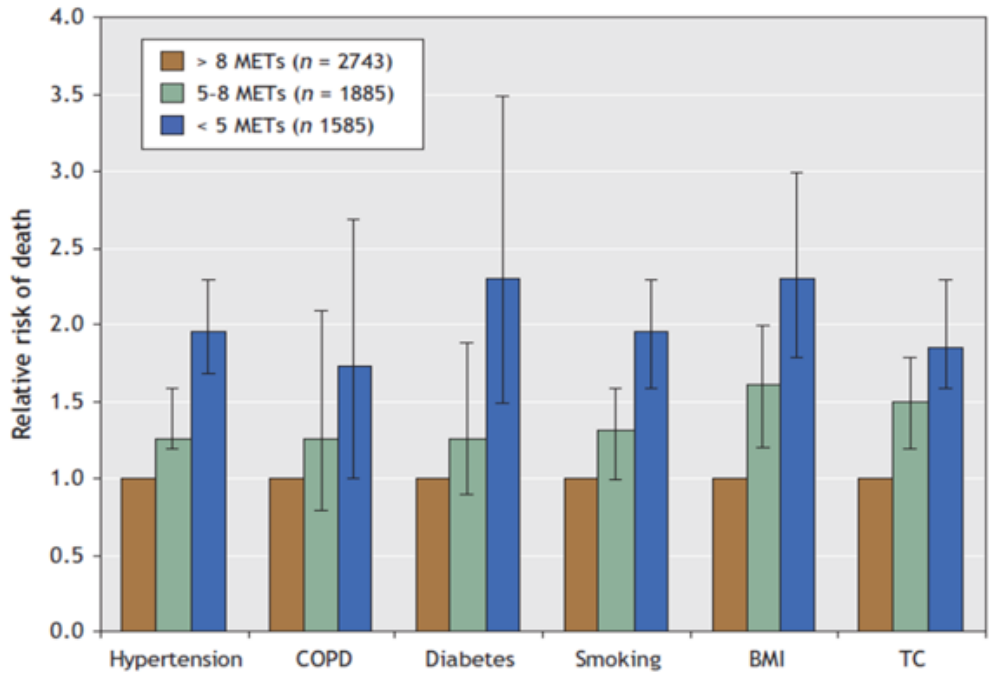
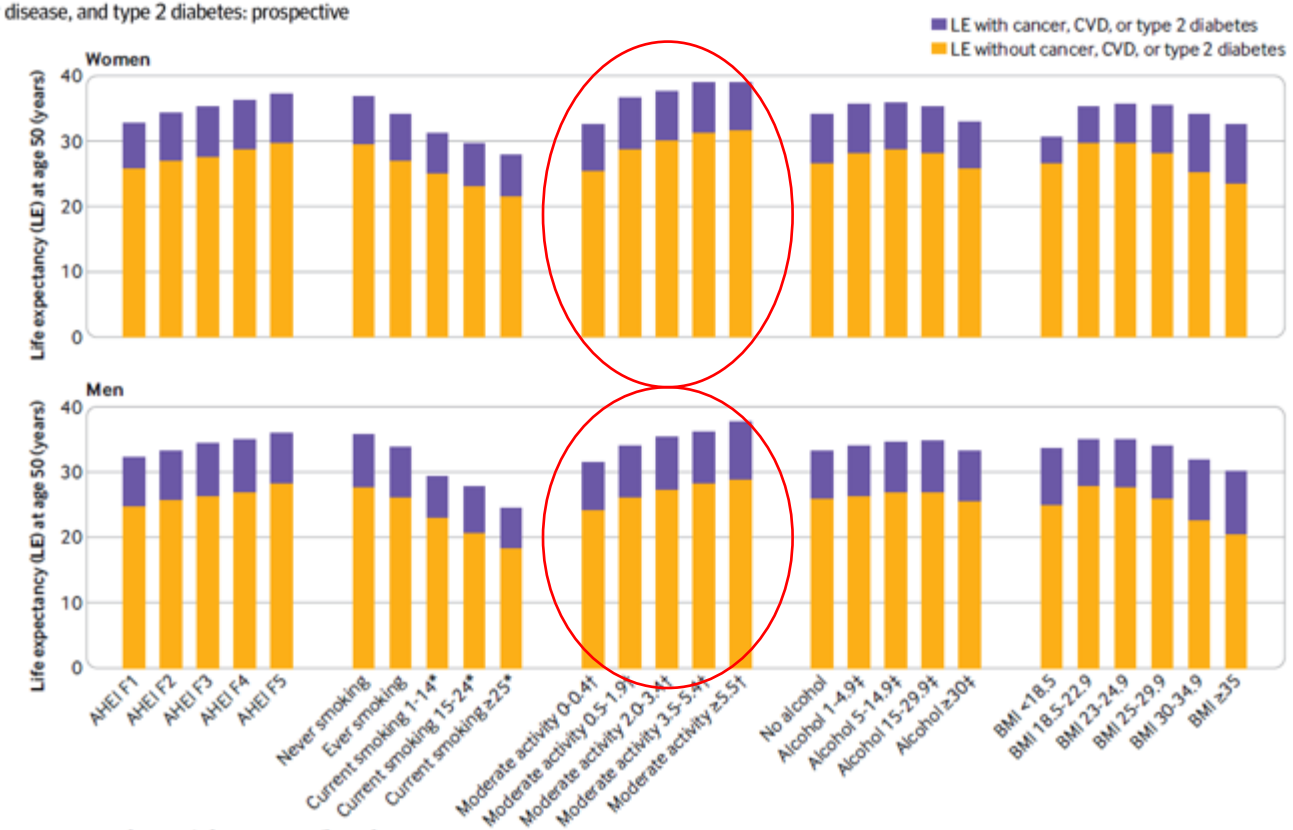
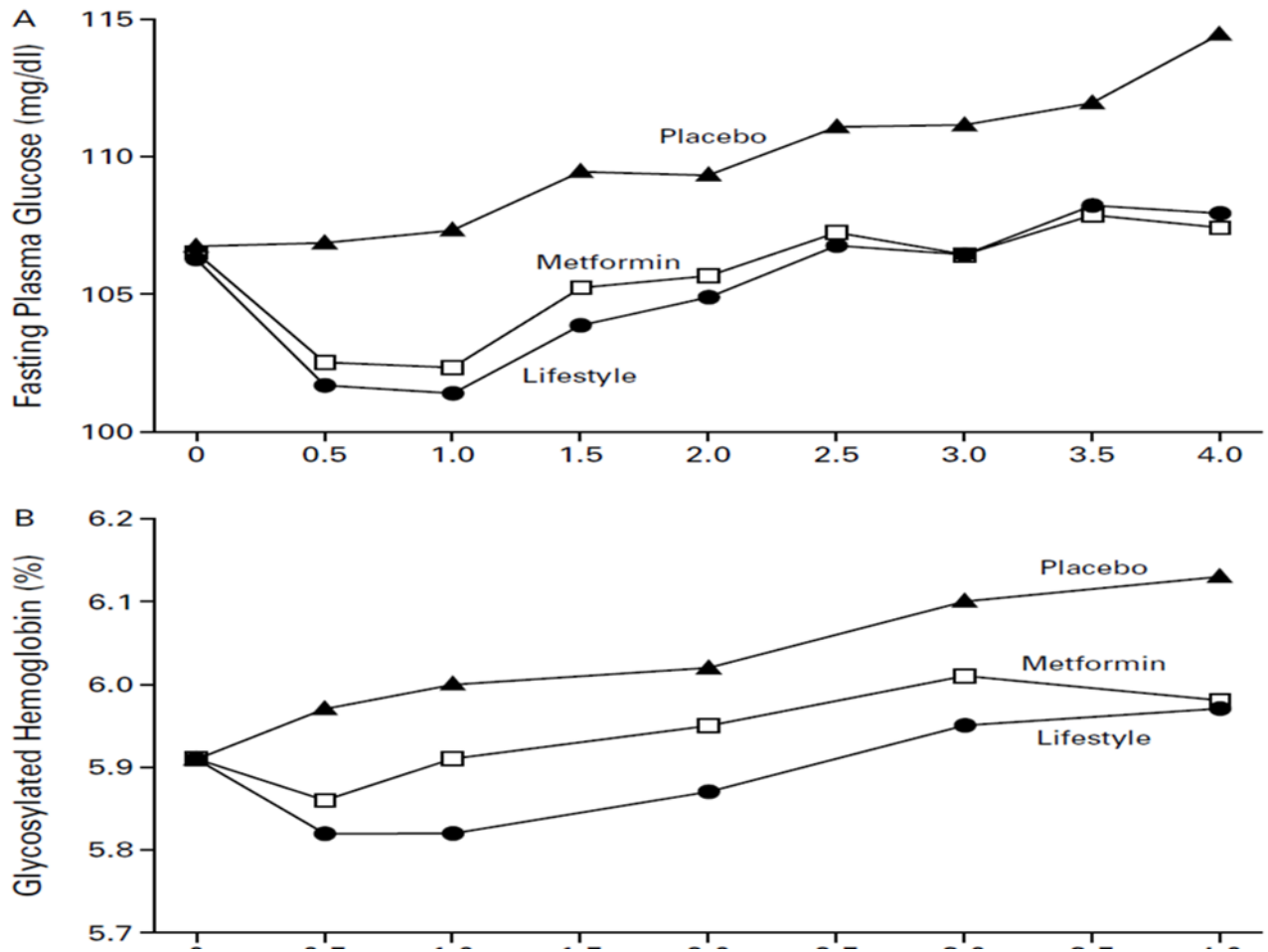



**Fig. 1:** Relative risks of death from any cause among participants with various risk factors (e.g., history of hypertension, chronic obstructive pulmonary disease [COPD], diabetes, smoking, elevated body mass index [BMI ≥ 30] and high total cholesterol level [TC ≥ 5.70 mmol/L) who achieved an exercise capacity of less than 5 METs (metabolic equivalents) or 5–8 METs, as compared with participants whose exercise capacity was more than 8 METs. Error bars represent 95% confidence intervals. Adapted, with permission, from Myers et al[38] (*N Engl J Med* 2002;346:793-801). 

Healthy lifestyle and life expectancy free of cancer, cardiovascular disease, and type 2 diabetes: prospective cohort study




thebmj | *BMJ* 2020;368:l6669 | doi: 10.1136/bmj.l6669


A
Fasting Plasma Glucose (mg/dl)
115
110
105
100
Placebo
Metformin
Lifestyle
0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
B
Glycosylated Hemoglobin (%)
6.2
6.1
6.0
5.9
5.8
5.7
Placebo
Metformin
Lifestyle


FYSS 2017
Fysisk aktivitet i sjukdomsprevention och sjukdomsbehandling
Läkartidningen Förlag AB
Yrkesföreningar för fysisk aktivitet

# Hreyfing sem meðferð

- Sykursýki II
- Þunglyndi og kvíði
- Hár blóðþrýstingur
- Hjartasjúkdómar
- Offita
- Stoðkerfissjúkdómar
- Langvinn lungnateppa
- Beinþynning
- Krabbamein

Statens
**folkhälso**institut

# FaR®

Individanpassad skriftlig
ordination av fysisk aktivitet

Með tilliti til þeirra gagna sem fyrir liggja:

Med utgångspunkt från dessa resultat bör hälso- och sjukvårdspersonal använda två nivåer av insatser till patienter som behöver öka sin fysiska aktivitet i förebyggande och behandlande syfte:

I. Till det stora flertalet erbjuds FaR, det vill säga patientcentrerade samtal och en individanpassad skriftlig ordination av fysisk aktivitet som patienten bedriver på egen hand (vardagsaktivitet eller organiserad aktivitet).

IIa. För de patienter som behöver utökat stöd för att komma i gång med fysisk aktivitet, erbjuds träningsgrupper inom vården som ett första steg.

IIb. FaR kan därefter underlätta övergången från strukturerad träning inom vården, till att individen blir varaktigt fysiskt aktiv på egen hand.

4.

VETENSKAPLIGT STÖD FÖR FAR

Heilbrigðisstarfsmenn eiga að bjóða þeim sjúklingum sem þurfa að auka hreyfingu
Í fyrirbyggjandi skyni eða meðferðarskyni úrræði

I. Flestum ætti að bjóða hreyfiseðil
IIa Sumum þjálfun í hópum
IIb Markmiðið að íhlutunin endi með viðvarandi aukinni hreyfingu á eigin vegum

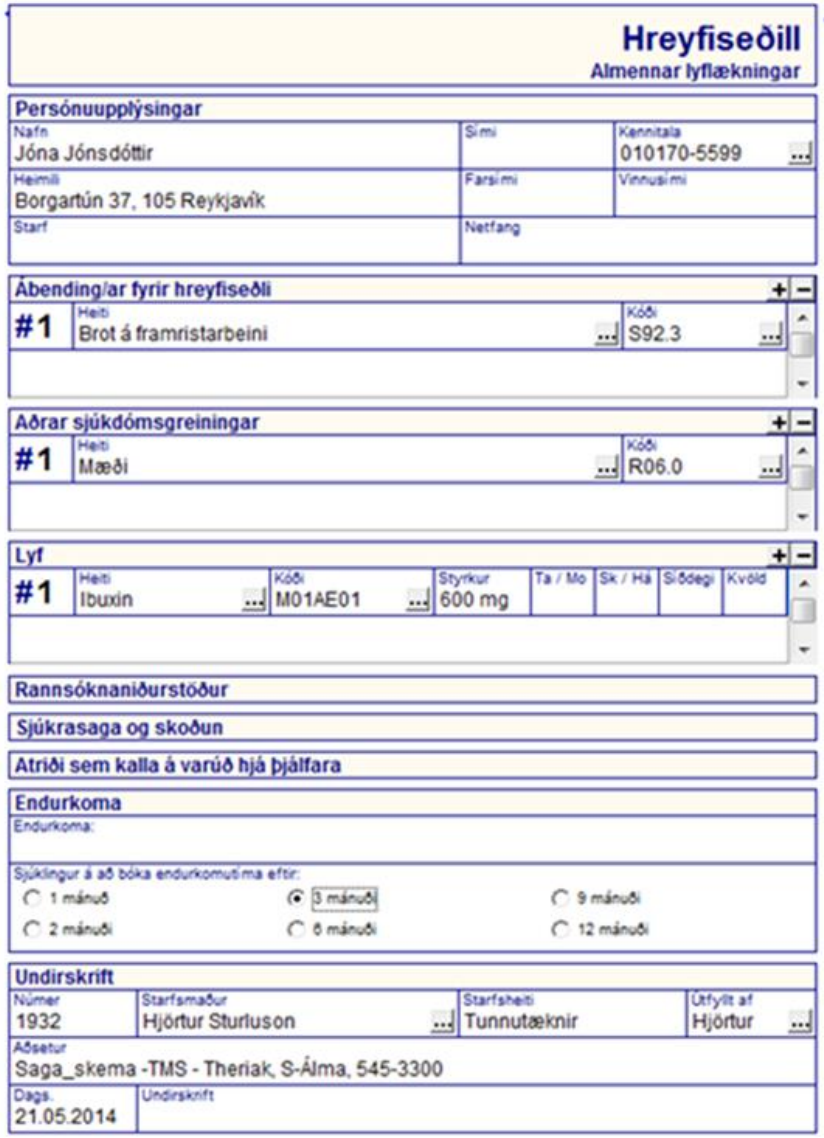
# HREYFISAGA

# Sjúkraþjálfari (hreyfistjóri) á stöðinni kynnir hreyfiseðil fyrir kandidat

Ágæti læknakandidat
Um leið og við bjóðum þig velkominn í starfsnám í heilsugæslunni viljum við minna á hreyfiseðilinn.
Læknar í heilsugæslunni geta ávísað hreyfingu sem meðferð, kallað hreyfiseðill. Við viljum hvetja þig til að kynna þér rit sem heitir FYSS (fysisk aktivitet I sjukdomsprevention och sjukdomsbehandling) og er á netinu fyss.se. Þar er að finna ítarlegar upplýsingar um hreyfingu sem fyrirbyggjandi úrræði og sem meðferð við allmörgum sjúkdómum. Um er að ræða algenga sjúkdóma eins og fullorðinssykursýki, háþrýsting, vægt þunglyndi, offitu, langvinna verki, beinþynningu, langvinna lungnateppu, astma osfrv.
Teljir þú ábendingu fyrir hreyfingu sem meðferð eða hluta af meðferð hjá sjúklingi getur þú ávísað hreyfiseðli.
Þú þarft að fylla út hreyfiseðilseyðublað (í bréfaflipa Sögu) og skrá sjúkling í viðtal hjá sjúkraþjálfara (hreyfistjóra) í bókunarkerfinu. Sjúkraþjálfarinn (hreyfistjórinn),sem er reyndur á sínu sviði með þekkingu á áhugahvetjandi samtölum á 1 klst viðtal við sjúkling, gerir mat á hans stöðu m.a. með 6 mín gönguprófi. Sjúkraþjálfarinn og sjúklingurinn leggja síðan upp plan um hreyfingu skv forskrift FYSS og miðað við getu og vilja viðkomandi. Sjúklingur skráir hreyfinguna í hreyfseðilseiningu í Heilsuveru og sjúkraþjálfarinn fylgist með frammistöðu hans og hefur samband eftir þörfum, hvetur og lagar prógrammið eftir þörfum. Tilvísandi læknir getur fylgst með í hreyfistjórnareingingu í Sögu og fær skýrslu um gang mála á 3 mán fresti og við útskrift úr hreyfiseðli.
Við hvetjum þig til að nýta þér þetta meðferðarúrræði og hvetjum þig til að hafa samband við undirritaðan ef einhverjar spurningar vakna.

# Hreyfiseðill

- Eyðublað í bréfaflipa Sögu
- Skrá í viðtal hjá sjúkraþjálfara -hreyfistjóra
- Viðtal við sjúkraþjálfara -hreyfistjóra
- Áætlun
- Skráning hreyfingar í heilsuveru
- Eftirfylgd sjúkraþjálfara -hreyfistjóra og hvatning
- Skýrsla til tilvísanda



# Hreyfiseðill

**Almennar lyflækningar**

**Persónuupplýsingar**

| Nafn | Sími | Kennitala |
|---|---|---|
| Jóna Jónsdóttir | | 010170-5599 |
| **Heimili** | **Farsími** | **Vinnusími** |
| Borgartún 37, 105 Reykjavík | | |
| **Starf** | **Netfang** | |
| | | |

**Ábending/ar fyrir hreyfiseðli**

| | Heiti | Kóði |
|---|---|---|
| #1 | Brot á framristarbeini | S92.3 |

**Aðrar sjúkdómsgreiningar**

| | Heiti | Kóði |
|---|---|---|
| #1 | Mæði | R06.0 |

**Lyf**

| | Heiti | Kóði | Styrkur | Ta / Mo | Sk / Há | Síðdegi | Kvöld |
|---|---|---|---|---|---|---|---|
| #1 | Ibuxin | M01AE01 | 600 mg | | | | |

**Rannsóknaniðurstöður**

**Sjúkrasaga og skoðun**

**Atriði sem kalla á varúð hjá þjálfara**

**Endurkoma**

Endurkoma:

Sjúklingur á að bóka endurkomutíma eftir:

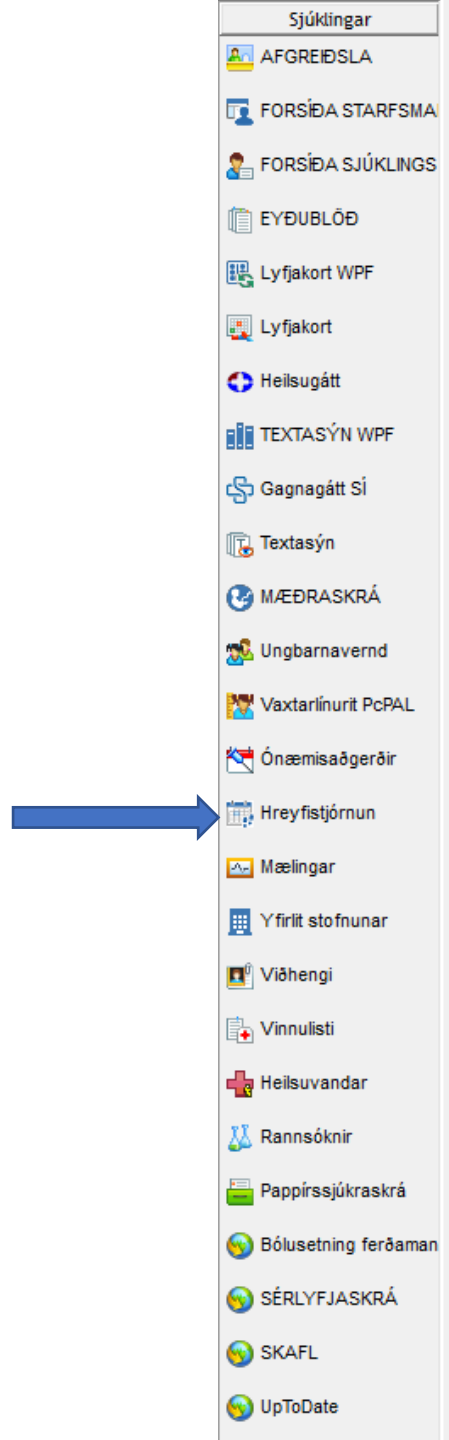
- ○ 1 mánuð
- ○ 2 mánuði
- ◉ 3 mánuði
- ○ 6 mánuði
- ○ 9 mánuði
- ○ 12 mánuði

**Undirskrift**

| Númer | Starfsmaður | Starfsheiti | Útfyllt af |
|---|---|---|---|
| 1932 | Hjörtur Sturluson | Tunnutæknir | Hjörtur |

Aðsetur: Saga_skema -TMS - Theriak, S-Álma, 545-3300

| Dags. | Undirskrift |
|---|---|
| 21.05.2014 | |



1. **Hversu miklum tíma verð þú í hefðbundinni viku í líkamlega þjálfun sem leiðir til mæði t.d. hlaup, leikfimi eða boltaíþróttir?**

- ☐ 0 mínútur / Engum tíma
- ☐ Minna en 30 mínútur
- ☐ 30 – 60 mínútur (1,5 – 1 klst)
- ☐ 60 – 90 mínútur (1 – 1,5 klst)
- ☐ 90 – 120 mínútur (1,5 – 2 klst)
- ☐ Meira en 120 mínútur (2 klst)

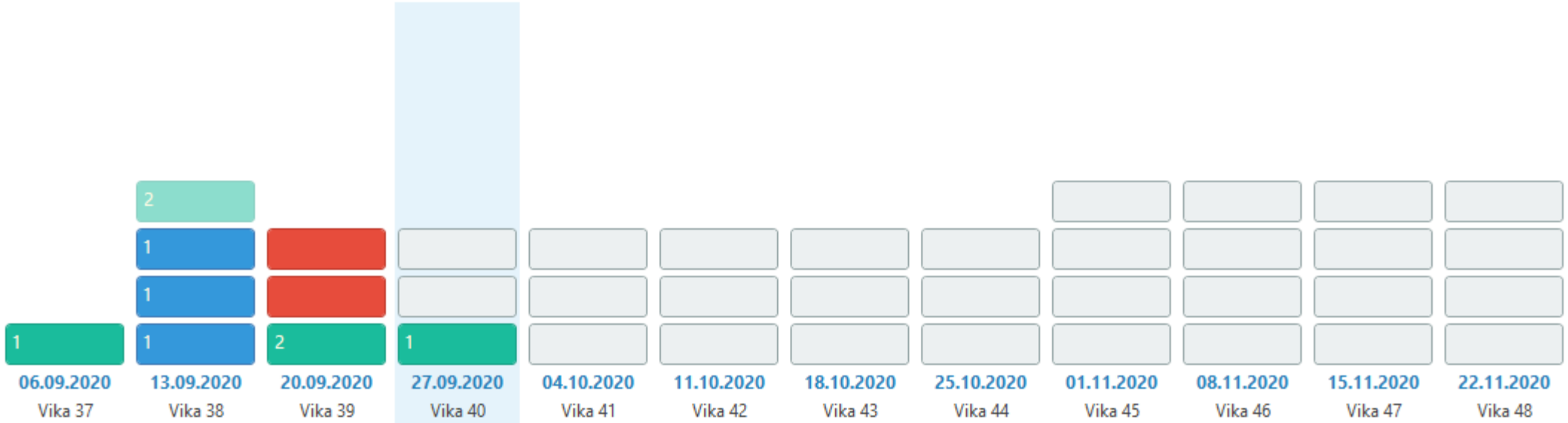
2. **Hversu miklum tíma verð þú í hefðbundinni viku í daglega hreyfingu t.d. í göngutúra, hjólreiðar eða garðvinnu? Leggðu saman heildartímann (minnst 10 mín í senn)**

- ☐ 0 mínútur / Engum tíma
- ☐ Minna en 30 mínútur
- ☐ 30 – 60 mínútur (1,5 – 1 klst)
- ☐ 60 – 90 mínútur (1 – 1,5 klst)
- ☐ 90 – 150 mínútur (1,5 – 2,5 klst)
- ☐ 150 – 300 mínútur (2,5 – 5 klst)
- ☐ Meira en 300 mínútur (5 klst)

| | | | Dagleg hreyfing | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | | mín | 0 | <30 | 30-60 | 60-90 | 90-150 | 150-300 | >300 |
| Þjálfun | 1 | 0 | | | | | | | |
| | 2 | <30 | | | | | | | |
| | 3 | 30 - 60 | | | | | | | |
| | 4 | 60 - 90 | | | | | | | |
| | 5 | 90 - 120 | | | | | | | |
| | 6 | >120 | | | | | | | |

## Hreyfistjórnun 11.09.2020 -

### Áætlun 11.09.2020




1 - Hreyfistjóri skráði hreyfingu.

1 - Hreyfistjóri skráði hreyfingu og er þetta hreyfing sem var aukadagur miðað við það sem áætlað var.

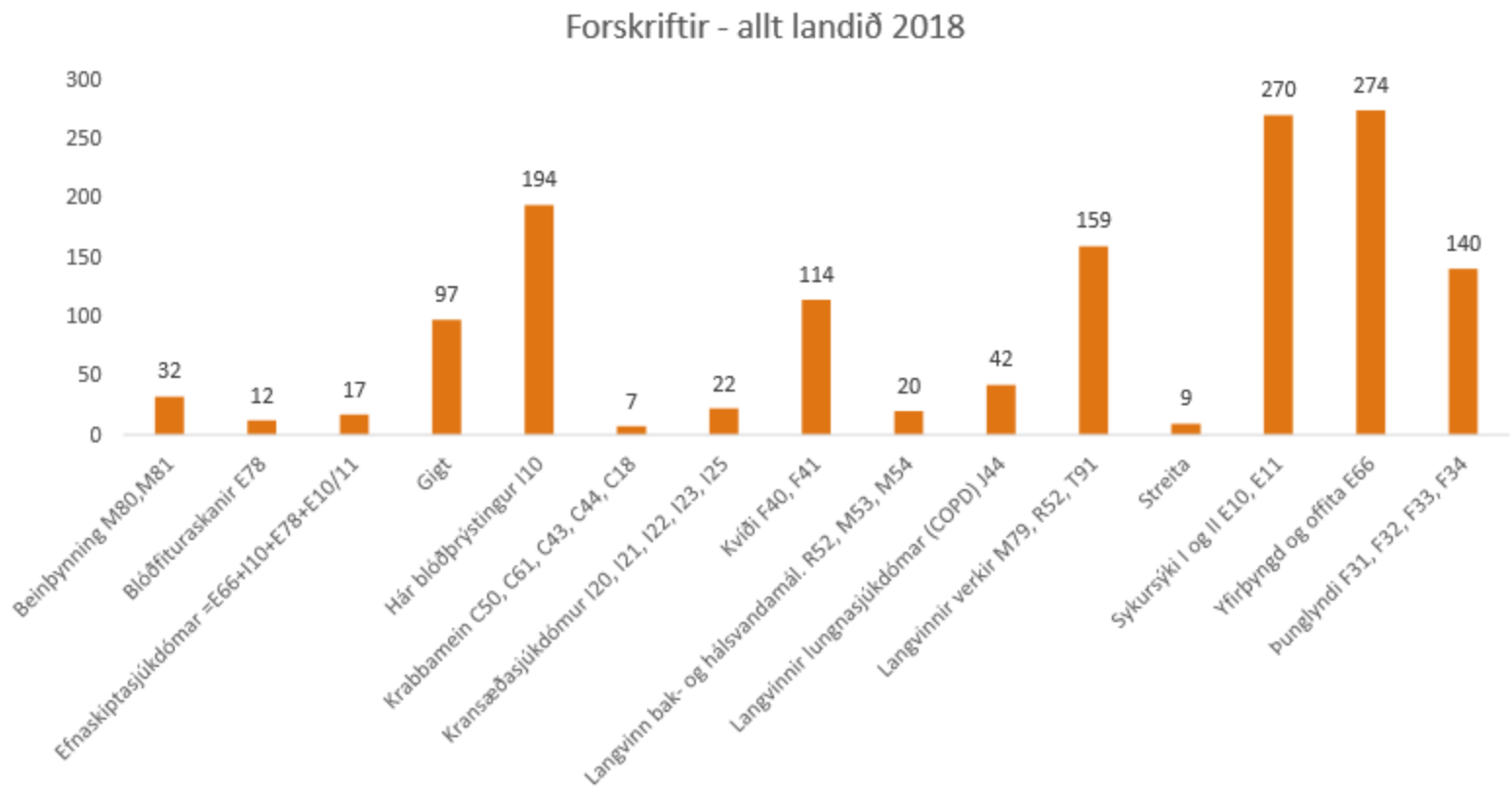
- Engin hreyfing skráð.

2 - Einstaklingur skráði hreyfingu og hreyfði sig tvisvar sama daginn.

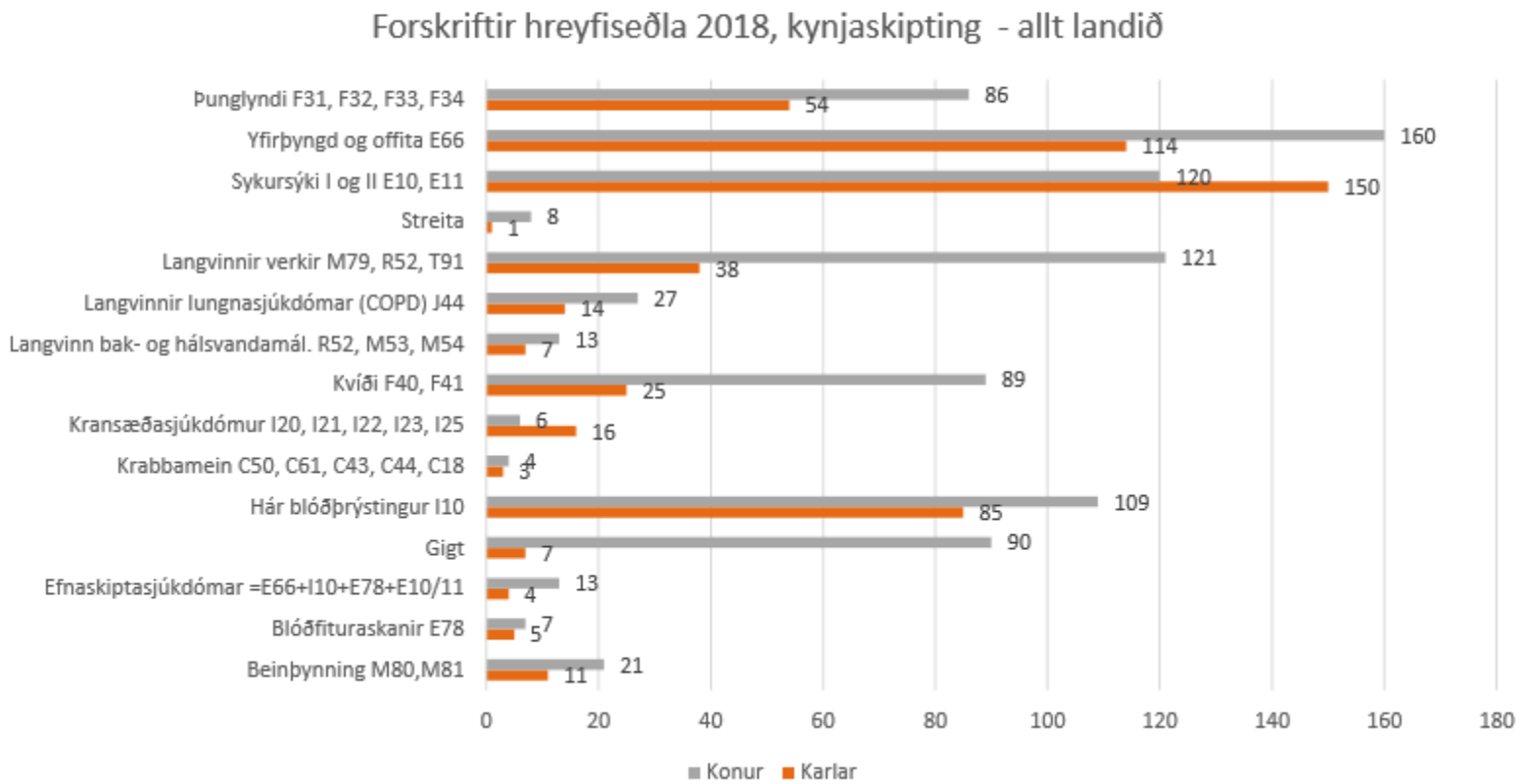
1 - Einstaklingur skráir sjálfur og hreyfir sig aukalega einn dag miðað við áætlun.

- Ekki hefur verið skráð hreyfing, þ.e. vika er ekki útrunnin og er eftir að skrá hreyfingu á dag.

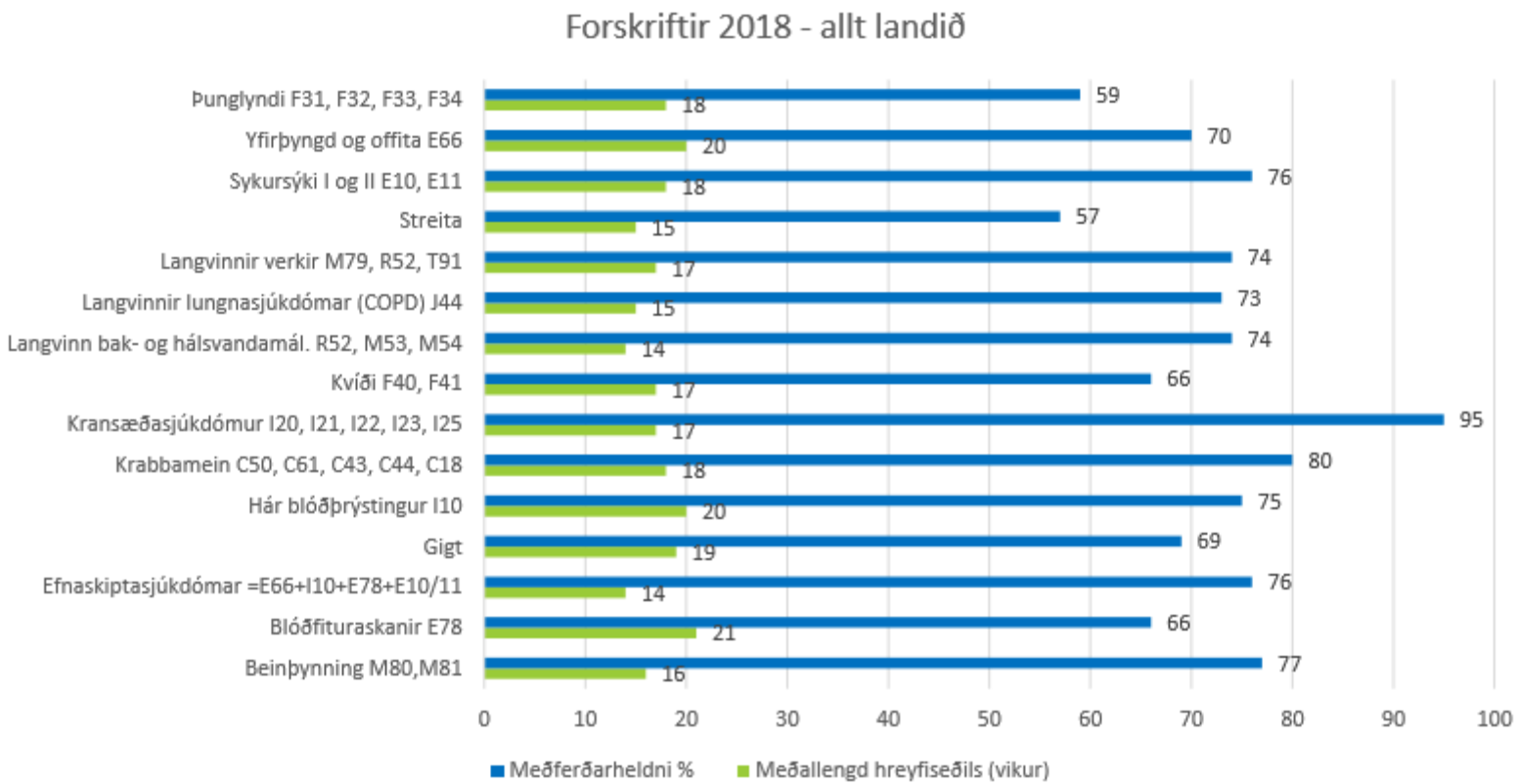
# Forskriftir – allt landið 2018



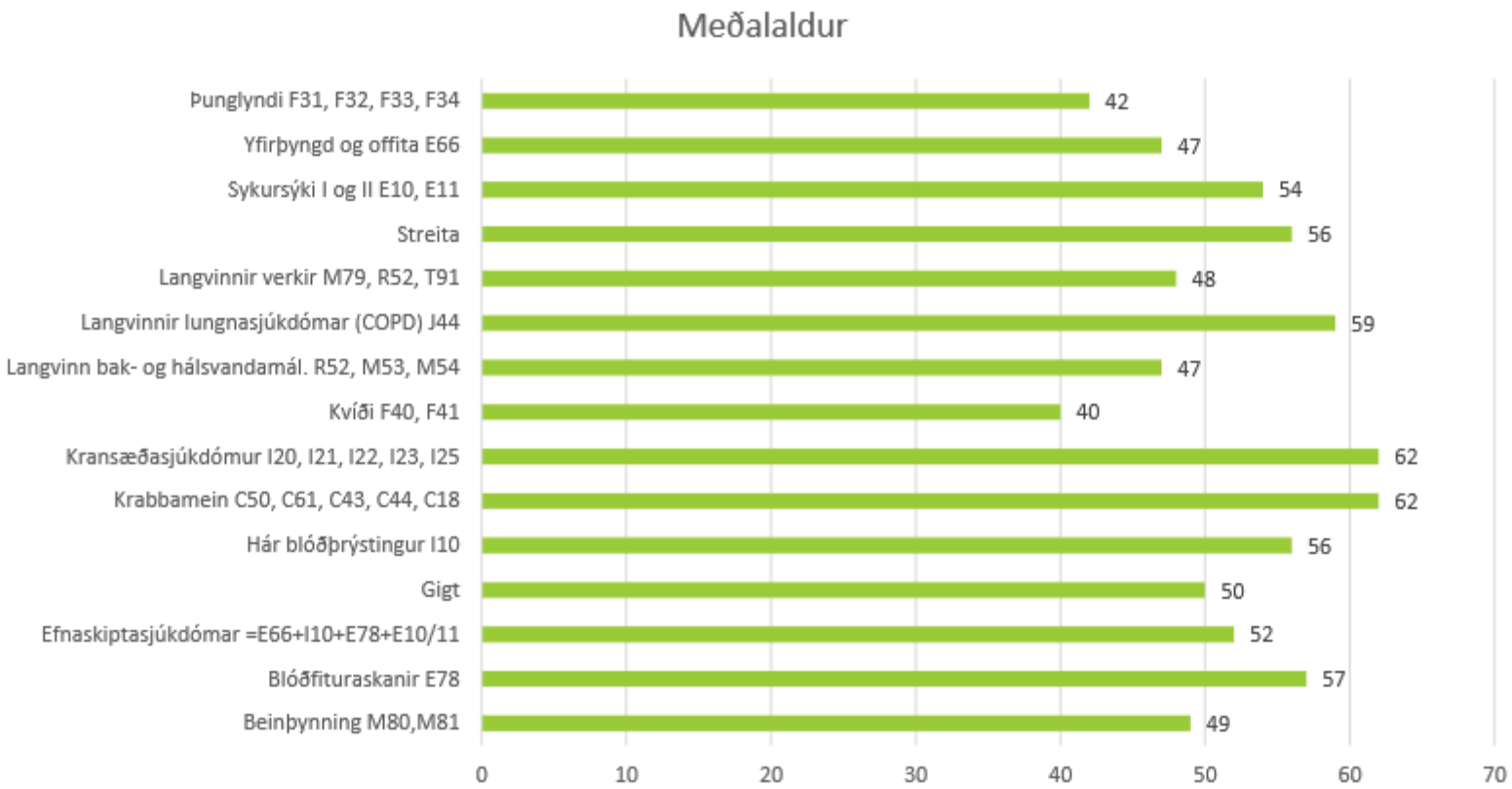
# Forskriftir 2018 - kynjaskipting



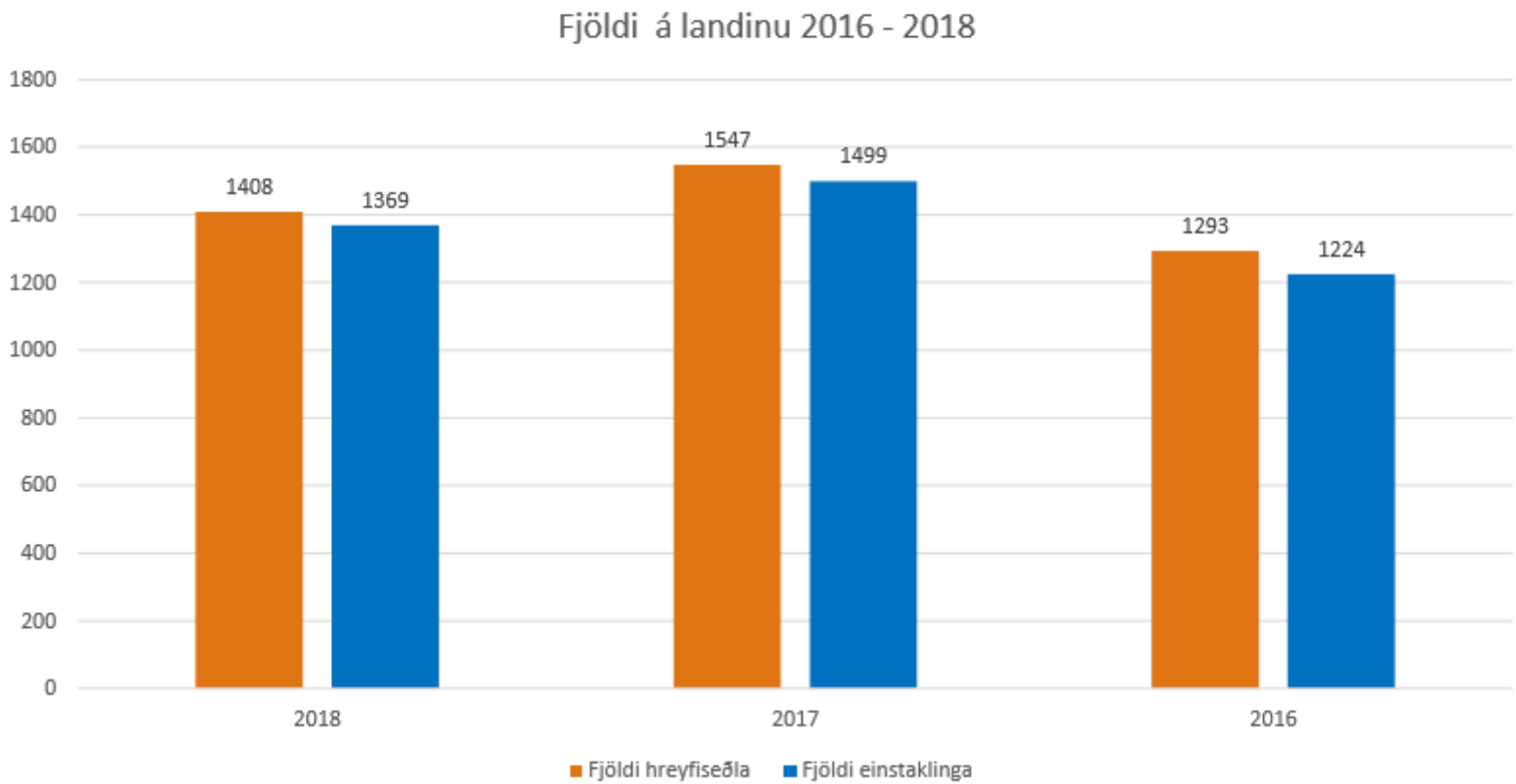
# Forskriftir eftir meðferðarheldni og lengd hreyfiseðils 2018 – allt landið



# Meðalaldur einstaklinga 2018 út frá forskriftum – allt landið



# Fjöldi á landinu öllu 2016 - 2018

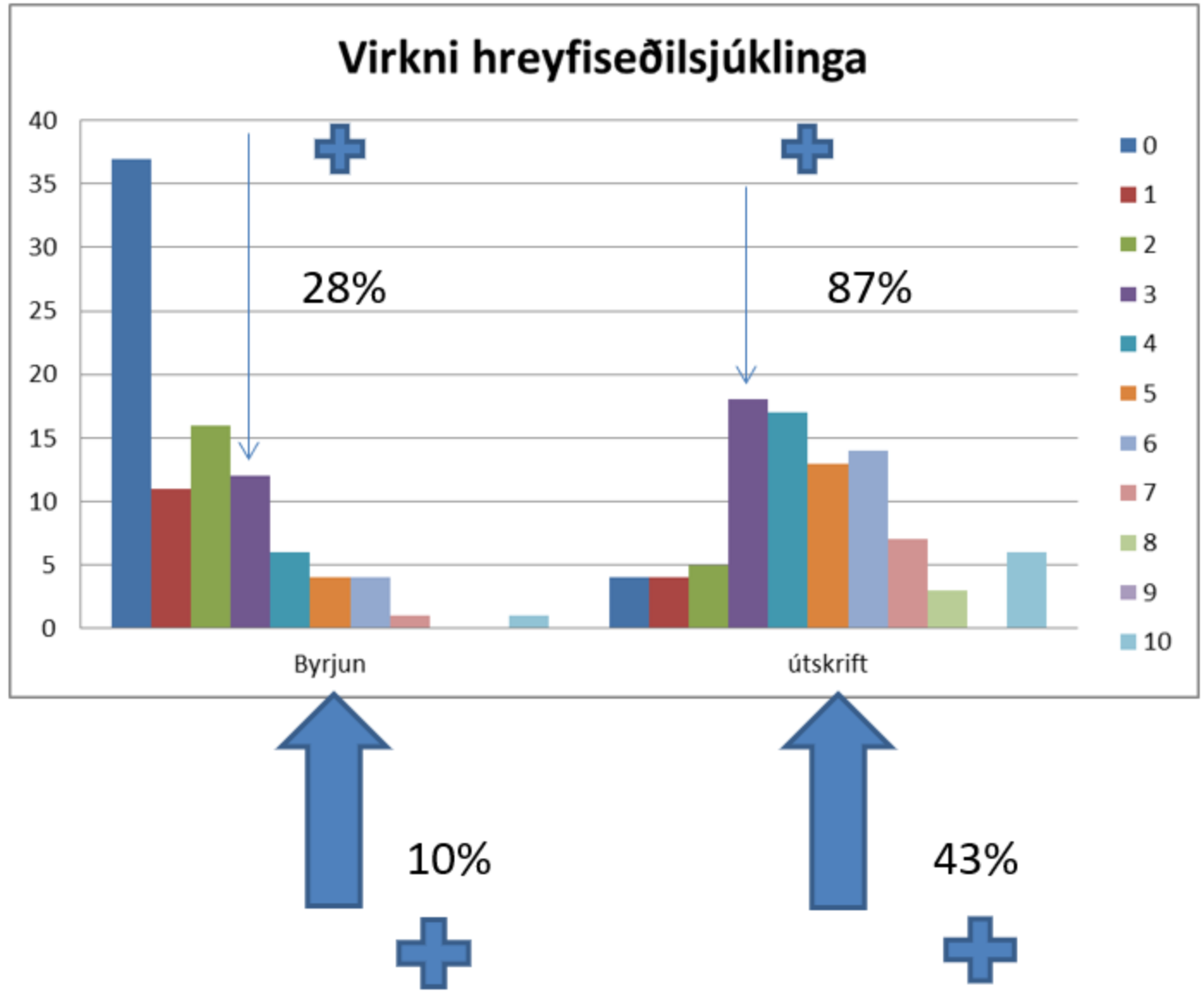


# Hreyfiseðlar á öllum stofnunum 2020

| Heilbrigðisumdæmi | Fjöldi einstaklinga | Fjöldi per 1000 manns útgefið | Fjöldi per 1000 manns með áætlun |
|---|---|---|---|
| Vesturland | 17.330 | 2,1 | 1,8 |
| Vestfirðir | 5.777 | 5,4 | 3,6 |
| Norðurland | 35.488 | 4,8 | 3,7 |
| Austurland | 10.207 | 4,0 | 3,3 |
| Suðurland | 28.415 | 2,4 | 1,8 |
| Suðurnes | 24.059 | 2,1 | 1,0 |
| Höfuðborgarsvæðið | 234.877 | 4,5 | 3,1 |
| | **356.153** | | |

# Hreyfiseðlar á höfuðborgarsvæðinu 2020

| Nánar: Höfuðborgarsvæðið | Fjöldi einstaklinga | Fjöldi per 1000 manns útgefið | Fjöldi per 1000 manns með áætlun |
|---|---|---|---|
| Heilsugæslan Árbæ | 14.704 | 4,8 | 2,7 |
| Heilsugæslan Efra-Breiðholti | 10.111 | 5,3 | 4,4 |
| Heilsugæslan Efstaleiti | 9.798 | 6,1 | 5,0 |
| Heilsugæslan Fjörður | 12.136 | 2,1 | 1,5 |
| Heilsugæslan Garðabæ | 12.946 | 4,7 | 4,0 |
| Heilsugæslan Glæsibæ | 8.877 | 5,9 | 5,0 |
| Heilsugæslan Grafarvogi | 11.237 | 2,8 | 2,8 |
| Heilsugæslan Hamraborg | 10.790 | 1,9 | 1,2 |
| Heilsugæslan Hlíðum | 11.575 | 7,5 | 5,1 |
| Heilsugæslan Hvammi | 9.216 | 2,0 | 1,3 |
| Heilsugæslan Miðbæ | 13.351 | 4,0 | 3,0 |
| Heilsugæslan Mjódd | 9.292 | 3,2 | 2,2 |
| Heilsugæslan Mosfellsumdæmi | 9.856 | 6,2 | 4,1 |
| Heilsugæslan Seltjarnarnesi | 16.417 | 8,5 | 5,5 |
| Heilsugæslan Sólvangi | 17.554 | 4,8 | 3,5 |
| Heilsugæslan Salahverfi | 15.505 | 0,6 | 0,6 |
| Heilsugæslan Höfða | 20.573 | 4,8 | 2,2 |
| Heilsugæslan Urðarhvarfi | 8.120 | 1,6 | 1,1 |
| Heilsugæslan Lágmúla | 12.819 | 6,6 | 4,4 |
| | 234.877 | | |


Virkni hreyfiseðilsjúklinga
40
35
30
25
20
15
10
5
0
28%
87%
0
1
2
3
4
5
6
7
8
9
10
Byrjun
útskrift
10%
43%

# Langtíma áhrif hreyfiseðils á virkni á SAK

Fjölnir Guðmannsson, Ósk Jórunn Árnadóttir, Jón Torfi Halldórsson

- 86 einstaklingar
- Virknispurningar
  - 2,1 í byrjun (86)
  - 5,3 við útskrift (86)
  - 4,0 eftir 6 mánuði (86)
  - 4,5 eftir 12 mánuði (43)
  - 4,3 eftir 18 mánuði (10)

Physical inactivity is and will remain one of the gravest threats to public health for this and future generations of Canadians unless a catalyst for change can be found. With a simple prescription for PA, front-line physicians have one more tool to bring about real change in the lives of Canadians. With the evidence summarised in this review, the message is clear that PA prescription works and costs less than relying on the alternatives alone. The time to act is now.



# Physical activity prescription: a critical opportunity to address a modifiable risk factor for the prevention and management of chronic disease: a position statement by the Canadian Academy of Sport and Exercise Medicine

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**Author note** This position statement has been endorsed by the following nine sport medicine societies: Australasian College of Sports and Exercise Physicians (ACSEP), American Medical Society for Sports Medicine (AMSSM), British Association of Sports and Exercise Medicine (BASEM), European College of Sport & Exercise Physicians (ECOSEP), Norsk forening for idrettsmedisin og fysisk aktivite (NIMF), South African Sports Medicine Association (SASMA), Schweizerische Gesellschaft für Sportmedizin/Swiss Society of Sports Medicine (SGSM/SSSM), Sport Doctors Australia (SDrA), Swedish Society of Exercise and Sports Medicine (SFAIM), and CASEM.

**ABSTRACT**

Non-communicable disease is a leading threat to global health. Physical inactivity is a large contributor to this problem; in fact, the WHO ranks it as the fourth leading risk factor for overall morbidity and mortality worldwide. In Canada, at least 4 of 5 adults do not meet the Canadian Physical Activity Guidelines of 150 min of moderate-to-vigorous physical activity per week. Physicians play an important role in the dissemination of physical activity (PA) recommendations to a broad segment of the population, as over 80% of Canadians visit their doctors every year and prefer to get health information directly from them. Unfortunately, most physicians do not regularly assess or prescribe PA as part of routine care, and even when discussed, few provide specific recommendations. PA prescription has the potential to be an important therapeutic agent for all ages in primary, secondary and tertiary prevention of chronic disease. Sport and exercise medicine (SEM) physicians are particularly well suited for this role and should collaborate with their primary care colleagues for optimal patient care. The purpose of this Canadian Academy and Sport and Exercise Medicine position statement is to provide an evidence-based, best practices summary to better equip SEM and primary care physicians to prescribe PA and exercise, specifically for the prevention and management of non-communicable disease. This will be achieved by addressing common questions and perceived barriers in the field.

Prescription of physical activity (PA) is a key element of the multifaceted societal approach needed to address inactivity.[4 5] Substantial evidence exists to support the benefits of exercise on at least 30 chronic diseases[6–10] as well as the cost-effectiveness of exercise prescription in primary care,[11 12] even for cardiovascular (CV) disease alone.[13]

Physicians play an important role in the dissemination of PA recommendations to a broad segment of the population. Over 80% of Canadians visit their doctors every year and prefer to get health information directly from their family physician.[14 15] Unfortunately, most physicians do not regularly assess or prescribe PA as a part of routine care,[16–18] and even when discussed, few provide specific recommendations.[19]

PA prescription has the potential to be an important therapeutic agent for all ages in primary, secondary and tertiary prevention of chronic disease. Sport and exercise medicine (SEM) physicians are particularly well suited for this role and should collaborate with their primary care colleagues for optimal patient care. We must act now to correct the general lack of knowledge and training in our medical schools and residency programmes surrounding PA guidelines and prescription[20–23] as well. The purpose of this Canadian Academy and

The results of the present systematic review have important clinical implications. We suggest that PAP models containing the core elements of the Swedish PAP model may be considered for implementation in routine healthcare to increase the PA levels of patients in need of increased PA. However, it remains to be elucidated which components of Swedish PAP plausibly are responsible for the positive effects on PA levels. Furthermore, long-term effects and effects on hard-end points need further study. We recommend that future studies focus on using well-validated methods for measuring level of PA and include long-term follow-ups. We also recommend that future studies investigate the individual effect of each core element of the Swedish PAP model.



# Physical activity on prescription in accordance with the Swedish model increases physical activity: a systematic review

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**ABSTRACT**

**Objectives** This study investigates the effects of the core elements of the Swedish model for physical activity on prescription (PAP) by evaluating studies that compared adults who received PAP with adults who did not receive PAP. All participants were adults identified by a healthcare professional as in need of increased physical activity. Primary outcome was level of physical activity.

**Design** Systematic review.

**Eligibility criteria** (1) Published 1999. (2) Systematic review, randomised controlled trial (RCT), non-RCT or case series (for adverse events). (3) ≥12 weeks' follow-up. (4) Performed in the Nordic countries. (5) Presented in English, Swedish, Norwegian or Danish.

**Data sources** Systematic searches in PubMed, Embase, the Cochrane Library, AMED, CINAHL and SweMed+ in September 2017. Included articles were evaluated using checklists to determine risk of bias.

**Results** Nine relevant articles were included: seven RCTs, one cohort study and one case series. Primary outcome was reported in seven articles from six studies (five RCTs, one cohort study, 642 participants). Positive results were reported from three of the five RCTs and from the cohort study. No study reported any negative results. Swedish PAP probably results in an increased level of physical activity (GRADE⊕⊕⊕O).

**Conclusions** Although the number of the reviewed articles was relatively modest, this systematic review shows that PAP in accordance with the Swedish model probably increases the level of physical activity. As a model for exercise prescription, Swedish PAP may be considered as part of regular healthcare to increase physical activity in patients.

**What is already known**

- Physical inactivity is the fourth leading cause of non-communicable disease worldwide according to the WHO.
- A large part of the population in industrialised countries, including the population in contact with healthcare, is insufficiently physically active.
- Methods to increase the level of physical activity in patients have shown mixed results in previous systematic reviews and therefore new methods are needed.

**What are the new findings**

- The present systematic review shows that the Swedish physical activity on prescription (PAP) method probably increases the level of physical activity in adult patients who are insufficiently active (GRADE⊕⊕⊕O).
- We suggest that the Swedish PAP model be used in the healthcare setting to increase the level of physical activity and be implemented as part of routine healthcare.

Although global consensus concludes that inadequate PA can cause health problems and that increased PA can improve health, evidence is still lacking with regard to optimal methods for increasing PA for people who would benefit from

Based on the higher-quality studies, it is possible to deliver a physical activity intervention for between €1120 and €15 860 per QALY gained, which is more cost-effective than many other currently-funded pharmaceutical interventions. Therefore, physical activity interventions delivered in primary health care should be considered for funding at similar levels to currently-funded pharmaceutical interventions.

# Are physical activity interventions in primary care and the community cost-effective?

## A systematic review of the evidence

*Sue Garrett, C Raina Elley, Sally B Rose, Des O'Dea, Beverley A Lawton and Anthony C Dowell*


### ABSTRACT

**Background**

The health and economic burden of physical inactivity is well documented. A wide range of primary care and community-based interventions are available to increase physical activity. It is important to identify which components of these interventions provide the best value for money.

**Aim**

To assess the cost-effectiveness of physical activity interventions in primary care and the community.

**Design of study**

Systematic review of cost-effectiveness studies based on randomised controlled trials of interventions to increase adult physical activity that were based in primary health care or the community, completed between 2002 and 2009.

**Method**

Electronic databases were searched to identify relevant literature. Results and study quality were assessed by two researchers, using Drummond's checklist for economic evaluations. Cost-effectiveness ratios for moving one person from inactive to active, and cost-utility ratios (cost per quality-adjusted life-year [QALY]) were compared between interventions.

**Results**

Thirteen studies fulfilled the inclusion criteria. Eight studies were of good or excellent quality. Interventions, study populations, and study designs were heterogeneous, making comparisons difficult. The cost to move one person to the 'active' category at 12 months was estimated for four interventions ranging from €331 to €3673. The cost-utility was estimated in nine studies, and varied from €348 to €86 877 per QALY.

**Conclusion**

Most interventions to increase physical activity were cost-effective, especially where direct supervision or instruction was not required. Walking, exercise groups, or brief exercise advice on prescription delivered in person, or by phone or mail appeared to be more cost-effective than supervised gym-based exercise classes or instructor-led walking programmes. Many physical activity interventions had similar cost-utility estimates to funded pharmaceutical interventions and should be considered for funding at a similar level.



**Keywords**

costs and cost analysis; exercise; primary health care; review, systematic.


### INTRODUCTION

The prevalence of physical inactivity remains high in developed and developing countries.[1] Not only does physical inactivity contribute to increased prevalence of chronic conditions such as cardiovascular disease, obesity, type 2 diabetes, osteoporosis, colon cancers, depression, and fall-related injuries, but it also contributes to between 1.5% and 3.0% of direct healthcare costs in developed countries.[1] A wide range of interventions have been shown to increase physical activity.[2] However, it is essential to identify which components provide the best value for money.

Physical activity counselling in primary health care has been recommended.[3] In some countries at least 80% of the population visit primary health care annually,[4,5] making this an ideal setting for intervening to increase physical activity. Furthermore, patients expect to receive health-related messages in this


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## Clinical practice implications of this study

The findings of our review suggest that exercise and many drug interventions are often potentially similar in terms of their mortality benefits; exercise interventions should therefore be considered as a viable alternative to, or alongside, drug therapy. Indeed, an increasing number of experts recommend prescribing an "exercise pill" as a preventive strategy to reduce morbidity and mortality.[53 54] According to the US Centers for Disease Control and Prevention, roughly one third of clinicians prescribe exercise in primary care.[55] However, as previous systematic reviews have shown, there is considerable uncertainty as to the effectiveness of primary care interventions for increasing physical activity.[56 57] As previously recommended, primary care doctors should give brief advice to most patients about the benefits of exercise and refer patients with chronic disease to a rehabilitation programme that includes an exercise intervention.[58]



# Comparative effectiveness of exercise and drug interventions on mortality outcomes: metaepidemiological study



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### Abstract

**Objective** To determine the comparative effectiveness of exercise versus drug interventions on mortality outcomes.

**Design** Metaepidemiological study.

**Eligibility criteria** Meta-analyses of randomised controlled trials with mortality outcomes comparing the effectiveness of exercise and drug interventions with each other or with control (placebo or usual care).

**Data sources** Medline and Cochrane Database of Systematic Reviews, May 2013.

**Main outcome measure** Mortality.

**Data synthesis** We combined study level death outcomes from exercise and drug trials using random effects network meta-analysis.

**Results** We included 16 (four exercise and 12 drug) meta-analyses. Incorporating an additional three recent exercise trials, our review collectively included 305 randomised controlled trials with 339 274 participants. Across all four conditions with evidence on the effectiveness of exercise on mortality outcomes (secondary prevention of coronary heart disease, rehabilitation of stroke, treatment of heart failure, prevention of diabetes), 14 716 participants were randomised to physical activity interventions in 57 trials. No statistically detectable differences were evident between exercise and drug interventions in the secondary prevention of coronary heart disease and prediabetes. Physical activity interventions were more effective than drug treatment among patients with stroke (odds ratios, exercise *v* anticoagulants 0.09, 95% credible intervals 0.01 to 0.70 and exercise *v* antiplatelets 0.10, 0.01 to 0.62). Diuretics were more effective than exercise in heart failure (exercise *v* diuretics 4.11, 1.17 to 24.76). Inconsistency between direct and indirect comparisons was not significant.

**Conclusions** Although limited in quantity, existing randomised trial evidence on exercise interventions suggests that exercise and many drug interventions are often potentially similar in terms of their mortality benefits in the secondary prevention of coronary heart disease, rehabilitation after stroke, treatment of heart failure, and prevention of diabetes.

## Introduction

Physical activity has well documented health benefits.[1] Population level cohort studies have shown that people who exercise enjoy a higher quality of life and improved health status compared with those with sedentary behaviours, with subsequent reductions in their risk of adverse outcomes such as admissions to hospital. Randomised controlled trials have shown similarly favourable findings in arthritis,[2] cancer,[3 4] diabetes,[5] heart disease,[6] and respiratory illnesses,[7] among other chronic conditions.[8 9] Large scale observational studies have also established a clear association between exercise and all cause mortality.[10-12] Given the overwhelming evidence in support of the health benefits of exercise,[13] the Global Burden of Disease study has recently ranked physical inactivity as the fifth leading cause of disease burden in western Europe, and as one of the top modifiable risk factors along with smoking.[14]

Despite recent calls to encourage physical activity as a strategy to ward off the emerging burden of chronic conditions, including heart disease and diabetes,[15] population level physical activity measures are discouraging. In the United Kingdom, only 14% of adults exercise regularly, with roughly one third of adults in England meeting recommended levels of physical activity.[16] In contrast, utilisation rates of prescription drugs continue to rise sharply, increasing to an average of 17.7 prescriptions for every person in England in 2010, compared with 11.2 in 2000.[17]

Abundant evidence from randomised controlled trials shows the mortality benefits of certain drugs such as simvastatin in the secondary prevention of cardiovascular disease,[18] which is

## Conclusions

Supported by clear evidence of small but positive results provided by several high-quality reviews, we advocate for interventions in PC settings designed to increase PA levels of patients. Interventions that include multiple behavioral change techniques and those targeted to insufficiently active or sedentary patients seem to have better results.

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# Effectiveness of physical activity promotion interventions in primary care: A review of reviews ☆

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ABSTRACT

*Objective.* The present review aims to summarize the evidence about the effectiveness of physical activity (PA) promotion interventions in primary care (PC) and the intervention or sample characteristics associated with greater effectiveness.

*Methods.* MEDLINE, EMBASE, and Cochrane Library were searched to identify systematic reviews and meta-analyses published from 2002 to 2012 that assessed the effectiveness of PA-promoting interventions in PC. Information was extracted and recorded about each of the selected studies and their reported results. Methodological and evidence quality was independently rated by two reviewers using the nine-item OQAQ scale and the SIGN classification system.

*Results.* Ten of the 1664 articles identified met the inclusion criteria: five meta-analyses, three systematic reviews, and two literature reviews. Overall, PA promotion interventions in PC showed a small to moderate positive effect on increasing PA levels. Better results were obtained by interventions including multiple behavioral change techniques and those targeted to insufficiently active patients. No clear associations were found regarding intervention intensity or sample characteristics.

*Conclusion.* Although several high-quality reviews provided clear evidence of small but positive effects of PA intervention in PC settings, evidence of specific strategies and sample characteristics associated with greater effectiveness is still needed to enhance the implementation of interventions under routine clinical conditions.



### Background

The numerous health benefits of regular physical activity (PA) are well known. Accordingly, it is recommended that adults perform at least 150 min/week of moderate-intensity PA, 75 min/week of vigorous PA, or a combination of moderate and vigorous PA (Haskell et al., 2007). However, a majority of the population in developed countries does not follow these recommendations, making PA promotion a public health priority (Tucker et al., 2011; Hallal et al., 2012).

Primary care (PC) practitioners can play a key role in promoting PA and improving population health in developed countries because of the ongoing care they provide to a large sector of the population (Estabrooks et al., 2003). It is estimated that up to 80% of adults in these countries visit their general practitioner (GP) at least once a year (van Doorslaer et al., 2006). Until recently, evidence about the effectiveness of interventions promoting PA in routine PC practice, especially in the long term, has been considered inconclusive (Foster et al., 2005; Muller-Riemenschneider et al., 2008). Newer studies have concluded in favor of PA interventions in the primary care setting, and recent meta-analyses indicate that the evidence appears to be shifting in this direction (Lin et al., 2010; Orrow et al., 2012; Hillsdon, 2013).

The high prevalence of inactivity in the population and the many obstacles faced by PC professionals in a setting characterized by work overload and a shortage of time and specialized training (Estabrooks and Glasgow, 2006; Grandes et al., 2008) combine to support the need for clear evidence of what can be achieved in PA promotion within primary care settings. Nonetheless, several challenges exist. First, there is no clear agreement among PC organizations and evidence-gathering agencies on the recommendations for PA promotion within the PC context. For example, the United States Preventive Services Task Force (USPSTF) currently recommends selective PA counseling rather than incorporating the message into routine practice in the general population (Moyer and U.S. Preventive Services Task Force, 2012); the United Kingdom's National Institute for Health and Clinical Excellence (NICE) also recommends that the National Health Service provides brief advice to adults who have been assessed as being inactive (National Institute for Health and Care Excellence, 2013), but the Royal Australian College

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## What is already known on this topic

- Internet use continues to grow throughout the world, and can now be used to reach an extensive array of individuals, covering a wide spectrum of the world population.
- Internet-based physical activity interventions have been shown to be just as effective as other types of physical activity interventions (eg, print based); however, more work is needed.
- More often than not, physicians counsel only a minority of their patients about making a health behaviour change, as time is a major limiting factor.

## What this study adds

- This paper serves as a call to action for increasing research on using internet-based physical activity programmes within the context of a primary care setting.
- Clinicians need access to electronic databases from which they can choose effective programmes to refer their patients to, as this has the potential to facilitate a successful change in behaviour.
- The future of internet-based physical activity research will harness the power of the internet; that is, a low cost, high reach, easily accessed physical activity programme available upon consumer demand.



# Using electronic/computer interventions to promote physical activity

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**ABSTRACT**

The internet has been used as a method to deliver various health interventions (eg, weight management, smoking cessation, increasing physical activity). An electronic search (ie, PubMed, PsycInfo, Web of Science) for internet-based physical activity interventions among adults yields fewer than 25 studies. Although many have considered physical activity as one element of a multifactorial behavioural intervention, few have focused exclusively on changing sedentary behaviour. Overall, current results are encouraging and it appears that response to an internet-based physical activity intervention is similar to response to other more established, effective interventions. Given that primary care referrals for physical activity are successful in changing sedentary behaviour to some extent, there is an urgent need for investigations into the effect of using an internet-based physical activity programme within the context of primary care. Although no studies that have combined an established internet-based physical activity programme with primary care were found, there is evidence that significant progress would probably be made by providing clinicians with information on internet-based physical activity programmes.

There is now a growing body of literature on the use of the internet as a tool to promote health behaviour change. Researchers have used internet interventions for numerous topics including weight management, smoking cessation, stress reduction, blood glucose control, reducing alcohol consumption and increasing physical activity. Currently, interventions focused specifically on changing physical activity behaviour are in their infancy, with fewer than 15 randomised controlled trials having been conducted. Thus far, the studies completed suggest that internet programmes are helpful in changing sedentary behaviour. However, more studies with larger samples and individualised treatment plans are needed,[1 2] including those that take into account how primary care can facilitate a change in behaviour by utilising internet-based health-promoting resources. In this review, we describe several internet-based studies that have produced a beneficial effect on changing participants' physical activity behaviour and we present some of the limitations of these studies.

## INTERNET USE

Worldwide, it is estimated that 21.9% of the population (ie, roughly 1.5 billion) use the internet.[3] The USA and the UK are among the top 10 countries with the highest internet usage (the USA is ranked second and the UK is ranked seventh),[3] with 72% of US and 67% of UK internet users going online every day or almost every day. Although only 27% of internet users in the UK have looked for health information online,[4] approximately 80% of the internet users in the USA have reported searching for health information[5] and 44% have searched for information specifically about fitness and nutrition.[6] In both the USA and the UK, use is high among all age groups, with approximately 90% of younger individuals (aged 16–24 years) and up to 72% of older adults (aged 55 years and older) online.[4 7] Rates are similar for both genders, with 76% of men and 74% of women in the USA and 71% of men and 62% of women online in the UK.[4 7] Whereas there are some demographic differences among users; overall, the internet has broad reach in the USA. Although internet use is lower among those who live in a rural area (64% online), those with less than a high school education (38% online), or those with an annual income of less than US$30 000 (61% online),[8] its use remains high among all racial/ethnic groups, with 76% of non-Hispanic whites, 60% of African Americans and 56% of Hispanics online. Moreover, among English-speaking Hispanics, internet use exceeds that of non-Hispanic whites (79% vs 76%).[9]

Given the above, it is clear that the internet can now be used to reach a very large number of individuals, covering a wide spectrum of the population. Moreover, because individuals' lifestyles often do not permit the time for office visits on health information and advice and physicians counsel only a minority of their patients about physical activity,[10] the internet can also provide a more time-efficient and convenient method of information delivery, particularly if it were to be paired with primary care. Yarnall and colleagues[11] estimated that providing preventive care alone, in keeping with evidence-based guidelines, may take up to 8 h per day for a primary care provider, highlighting the time constraints of activities such as physical activity counselling. As such, using the internet as a resource to provide physical activity advice or programming for those who would otherwise not receive it is now a potential possibility.


Eight Steps To
Successful Change
- John Kotter
Institutionalise the change
Consolidate & build on the gains
Create short term wins
Empower people to act on the vision
Communicate the vision
Develop a clear shared vision
Create a guiding coalition
Establish a sense of urgency