

PREVENCE CIVILIZAČNÍCH ONEMOCNĚNÍ OSP

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UK FTVS

ÚVODEM – CIVILIZAČNÍ ONEMOCNĚNÍ

skupiny onemocnění – vymezené spíše výčtem než popisem

► vznik

- a) neovlivnitelné faktory (rodinná zátěž, pohlaví)
- b) ovlivnitelné faktory (spojené s životním stylem)

- nedostatek pohybu
- kouření
- alkohol
- špatné stravovací návyky
- stres
- nekvalitní spánek
- životní prostředí



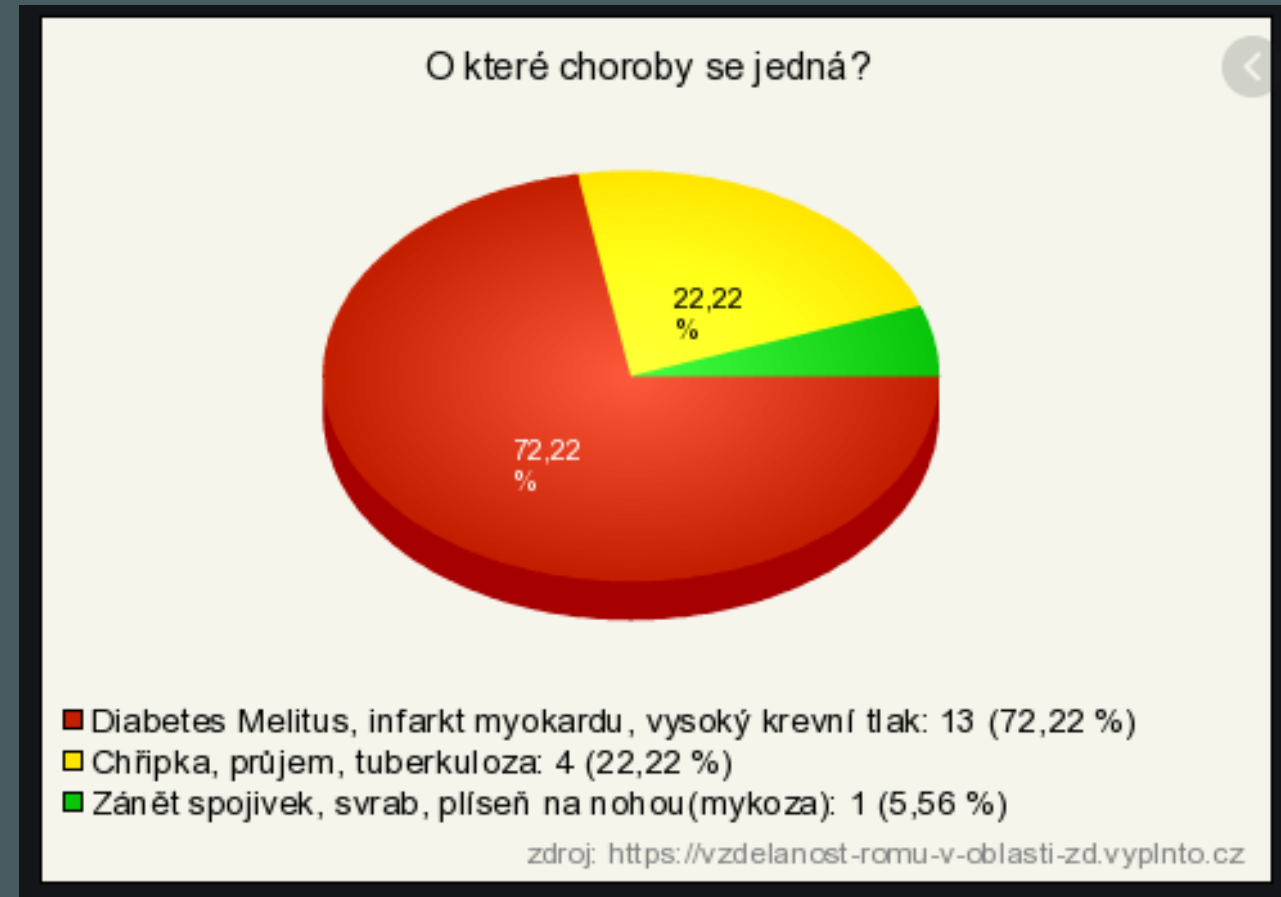
https://www.youtube.com/watch?v=k4Z0l_czV88

- kardiovaskulární onemocnění (ISCHS, hypertenze, CMP...)
- diabetes mellitus
- obezita
- metabolický syndrom
- vředové choroby žaludku
- onemocnění pohybového systému (bolesti zad, vertebrogenní poruchy, artróza)
- migrény, bolesti hlavy
- alergie, astma
- poruchy příjmu potravy

- osteoporóza
- chronické záněty
- sterilita, infertilita apod.
- některé vrozené vývojové vady CNS
- psychické potíže (deprese, únavový syndrom, syndrom vyhoření, závislosti)
- demence včetně Alzheimerovy choroby
- poruchy imunity
- nádorová onemocnění
- AIDS

ZAKONČENÍ PŘEDMĚTU

- účast na výuce
- splnění úkolů v Teams
 - *IPAQ*
 - *krokoměr*
 - *hospitace*
 - *článek*
- ústní zkouška – znalosti + kasuistika



JAKÁ BY MĚLA BÝT PREVENCE?

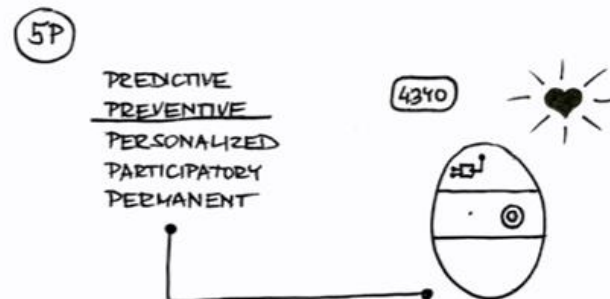
Budoucnost medicíny?
Telemedicína? Telerehabilitace?

5P (dle Šebka /LIFMAT 2021/)

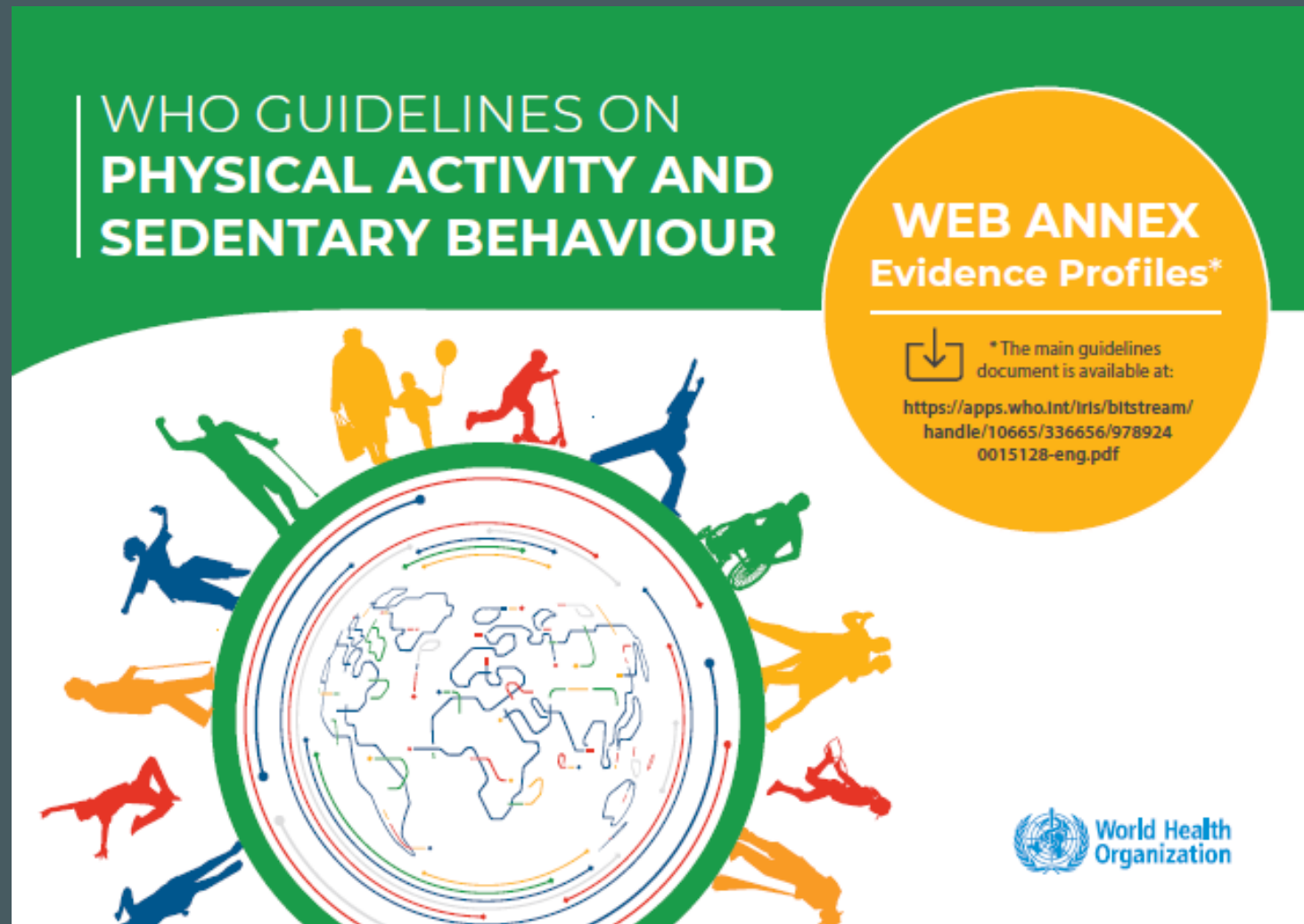
- Prediktivní
- Preventivní
- Personalizovaná
- Participantní
- Permanentní



Zdroj.: <https://pfyziolklin.upol.cz/>



KAŽDÝ KROK SE POČÍTÁ ANEB WHO BIJE NA POPLACH



<https://www.youtube.com/watch?v=jY7YvglA92s&feature=youtu.be>

POSELSTVÍ KAMPANĚ

1. PA je dobrá pro srdce, tělo a mysl.
2. Jakékoli množství PA je lepší než žádné a čím více, tím lépe.
3. Každá PA se počítá.
4. Z posílení svalů profituje každý.
5. Příliš „sedavé“ chování může být nezdravé.
6. Každý může profitovat ze zvýšení PA a redukce sedavého chování.

- 
- 1 **Physical activity is good for hearts, bodies and minds.**
Regular physical activity can prevent and help manage heart disease, type-2 diabetes, and cancer which cause nearly three quarters of deaths worldwide. Physical activity can also reduce symptoms of depression and anxiety, and enhance thinking, learning, and overall well-being.
 - 2 **Any amount of physical activity is better than none, and more is better.** For health and wellbeing, WHO recommends at least 150 to 300 minutes of moderate aerobic activity per week (or the equivalent vigorous activity) for all adults, and an average of 60 minutes of moderate aerobic physical activity per day for children and adolescents.
 - 3 **All physical activity counts.**
Physical activity can be done as part of work, sport and leisure or transport (walking, wheeling and cycling), as well as every day and household tasks.
 - 4 **Muscle strengthening benefits everyone.**
Older adults (aged 65 years and older) should add physical activities which emphasize balance and coordination, as well as muscle strengthening, to help prevent falls and improve health.
 - 5 **Too much sedentary behaviour can be unhealthy.**
It can increase the risk of heart disease, cancer, and type-2 diabetes. Limiting sedentary time and being physically active is good for health.
 - 6 **Everyone can benefit from increasing physical activity and reducing sedentary behaviour,** including pregnant and postpartum women and people living with chronic conditions or disability.

DOPORUČENÍ PRO SENIORY

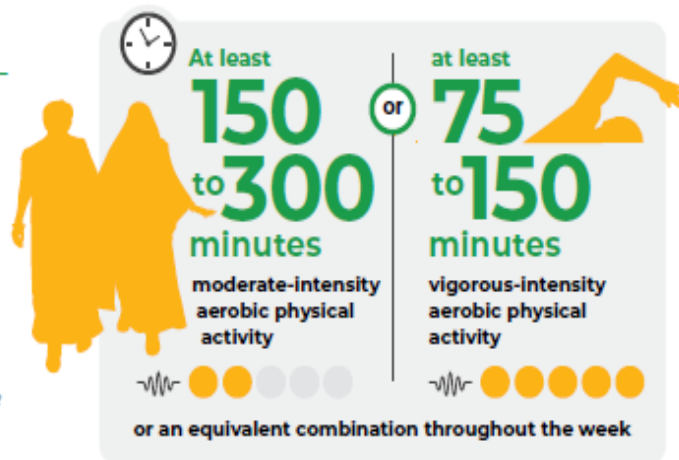
It is recommended that:

› All older adults should undertake regular physical activity.

Strong recommendation, moderate certainty evidence

› Older adults should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for substantial health benefits.

Strong recommendation, moderate certainty evidence



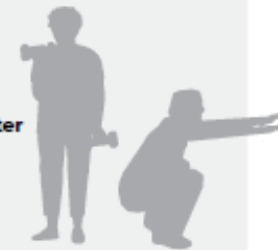
For additional health benefits:

On at least



2
days
a week

muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups.



› Older adults should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.

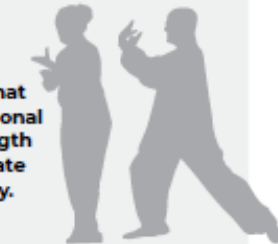
Strong recommendation, moderate certainty evidence

On at least



3
days
a week

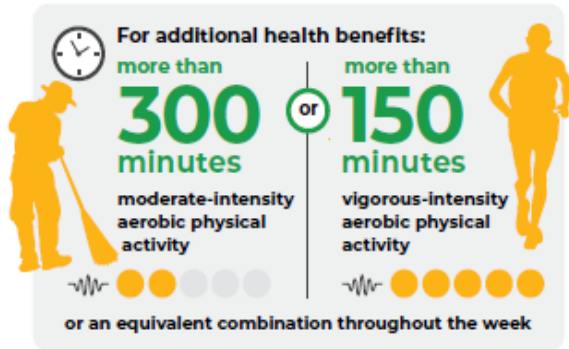
varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity.



› As part of their weekly physical activity, older adults should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity, on 3 or more days a week, to enhance functional capacity and to prevent falls.

Strong recommendation, moderate certainty evidence

DOPORUČENÍ PRO SENIORY



➤ Older adults may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week, for additional health benefits.

Conditional recommendation, moderate certainty evidence

GOOD PRACTICE STATEMENTS

- Doing some physical activity is better than doing none.
- If older adults are not meeting the recommendations, doing some physical activity will bring benefits to health.
- Older adults should start by doing small amounts of physical activity, and gradually increase the frequency, intensity and duration over time.
- Older adults should be as physically active as their functional ability allows, and adjust their level of effort for physical activity relative to their level of fitness.

In older adults, higher amounts of sedentary behaviour are associated with the following poor health outcomes: all-cause mortality, cardiovascular disease mortality and cancer mortality, and incidence of cardiovascular disease, cancer and incidence of type-2 diabetes.

In older adults, higher amounts of sedentary behaviour are associated with the following poor health outcomes: all-cause mortality, cardiovascular disease mortality and cancer mortality, and incidence of cardiovascular disease, cancer and incidence of type-2 diabetes.

It is recommended that:

➤ Older adults should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.

Strong recommendation, moderate certainty evidence

➤ To help reduce the detrimental effects of high levels of sedentary behaviour on health, older adults should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.

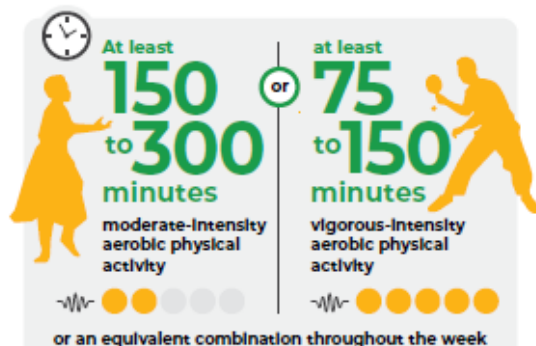
Strong recommendation, moderate certainty evidence



DOPORUČENÍ PRO OSOBY S CHRONICKÝM ONEMOCNĚNÍM

It is recommended that:

> All adults and older adults with the above chronic conditions should undertake regular physical activity. *Strong recommendation, moderate certainty evidence*



> Adults and older adults with these chronic conditions should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for substantial health benefits.

Strong recommendation, moderate certainty evidence

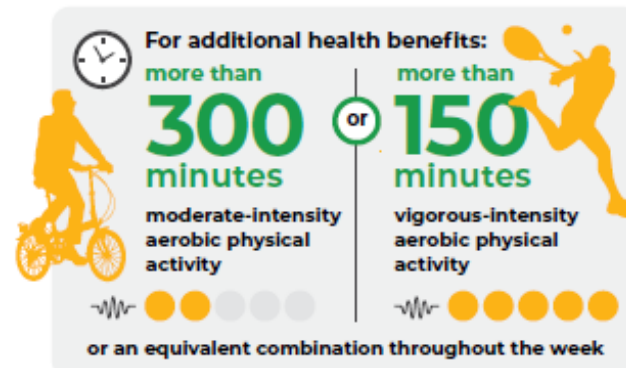
> Adults and older adults with these chronic conditions should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional benefits.

Strong recommendation, moderate certainty evidence



> As part of their weekly physical activity, older adults with these chronic conditions should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity on 3 or more days a week, to enhance functional capacity and prevent falls.

Strong recommendation, moderate certainty evidence



> When not contraindicated, adults and older adults with these chronic conditions may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.

Conditional recommendation, moderate certainty evidence

GOOD PRACTICE STATEMENTS

- When not able to meet the above recommendations, adults with these chronic conditions should aim to engage in physical activity according to their abilities.
- Adults with these chronic conditions should start by doing small amounts of physical activity and gradually increase the frequency, intensity and duration over time.
- Adults with these chronic conditions may wish to consult with a physical activity specialist or health-care professional

for advice on the types and amounts of activity appropriate for their individual needs, abilities, functional limitations/complications, medications, and overall treatment plan.

- Pre-exercise medical clearance is generally unnecessary for individuals without contraindications prior to beginning light- or moderate-intensity physical activity not exceeding the demands of brisk walking or everyday living.

In adults, including cancer survivors and people living with hypertension, type-2 diabetes and HIV, higher amounts of sedentary behaviour are associated with the following poor health outcomes: all-cause mortality, cardiovascular disease mortality and cancer mortality, and incidence of cardiovascular disease, cancer and incidence of type-2 diabetes.

DOPORUČENÍ PRO OSOBY S CHRONICKÝM ONEMOCNĚNÍM

For cancer survivors, and adults living with hypertension, type-2 diabetes and HIV, It is recommended that:

- › Adults and older adults with chronic conditions should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.

Strong recommendation, low certainty evidence

- › To help reduce the detrimental effects of high levels of sedentary behaviour on health, adults and older adults with chronic conditions should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.

Strong recommendation, low certainty evidence

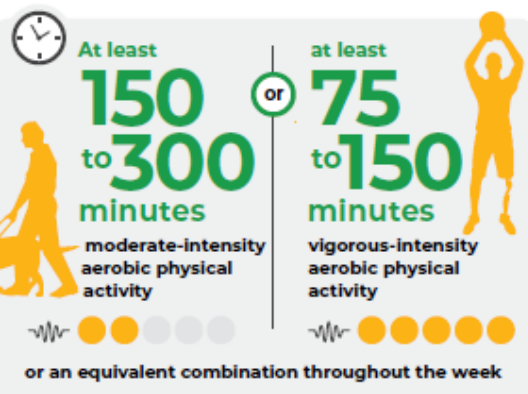


DOPORUČENÍ PRO DOSPĚLÉ S POSTIŽENÍM

It is recommended that:

> All adults living with disability should undertake regular physical activity.

Strong recommendation, moderate certainty evidence



> Adults living with disability should do at least 150–300 minutes of moderate-intensity aerobic physical activity; or at least 75–150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for substantial health benefits.

Strong recommendation, moderate certainty evidence

> Adults living with disability should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as these provide additional health benefits.

Strong recommendation, moderate certainty evidence

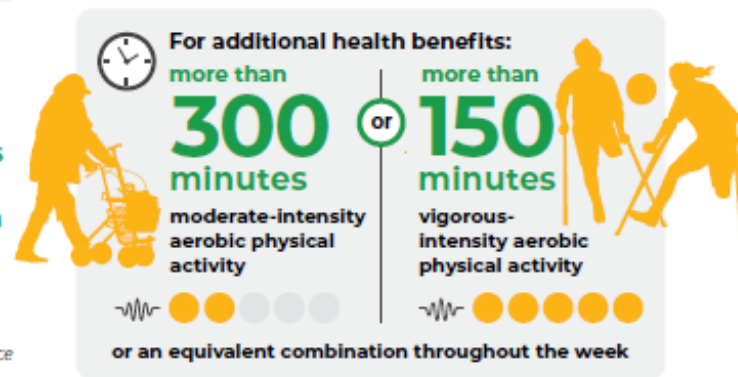


> As part of their weekly physical activity, older adults living with disability should do varied multicomponent physical activity that emphasizes functional balance and strength training at moderate or greater intensity on 3 or more days a week, to enhance functional capacity and prevent falls.

Strong recommendation, moderate certainty evidence

> Adults living with disability may increase moderate-intensity aerobic physical activity to more than 300 minutes; or do more than 150 minutes of vigorous-intensity aerobic physical activity; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week for additional health benefits.

Conditional recommendation, moderate certainty evidence



DOPORUČENÍ PRO DOSPĚLÉ S POSTIŽENÍM

GOOD PRACTICE STATEMENTS

- Doing some physical activity is better than doing none.
- If adults living with disability are not meeting these recommendations, doing some physical activity will bring benefits to health.
- Adults living with disability should start by doing small amounts of physical activity, and gradually increase the frequency, intensity and duration over time.
- There are no major risks to adults living with disability engaging in physical activity when it is appropriate to the individual's current activity level, health status and physical function; and when the health benefits accrued outweigh the risks.
- Adults living with disability may need to consult a health-care professional or other physical activity and disability specialist to help determine the type and amount of activity appropriate for them.

In adults, higher amounts of sedentary behaviour are associated with the following poor health outcomes: all-cause mortality, cardiovascular disease mortality and cancer mortality and incidence of cardiovascular disease, cancer and type-2 diabetes.

It is recommended that:

- › **Adults living with disability should limit the amount of time spent being sedentary. Replacing sedentary time with physical activity of any intensity (including light intensity) provides health benefits.**

Strong recommendation, low certainty evidence

- › **To help reduce the detrimental effects of high levels of sedentary behaviour on health, adults living with disability should aim to do more than the recommended levels of moderate- to vigorous-intensity physical activity.**

Strong recommendation, low certainty evidence



DOPORUČENÍ PRO DĚTI S POSTIŽENÍM

At least
60
minutes a day



moderate- to vigorous-intensity physical activity across the week; most of this physical activity should be aerobic.



It is recommended that:

- > Children and adolescents living with disability should do at least an average of 60 minutes per day of moderate- to vigorous-intensity, mostly aerobic, physical activity, across the week.

Strong recommendation, moderate certainty evidence

On at least
3
days a week




vigorous-intensity aerobic activities, as well as those that **strengthen muscle and bone** should be incorporated.



- > Vigorous-intensity aerobic activities, as well as those that strengthen muscle and bone should be incorporated at least 3 days a week.

Strong recommendation, moderate certainty evidence

GOOD PRACTICE STATEMENTS

- 
- Doing some physical activity is better than doing none.
 - If children and adolescents living with disability are not meeting these recommendations, doing some physical activity will bring benefits to health.
 - Children and adolescents living with disability should start by doing small amounts of physical activity and gradually increase the frequency, intensity and duration over time.
 - There are no major risks for children and adolescents living with disability engaging in physical activity when it is appropriate to an individual's current activity level, health status and physical function; and the health benefits accrued outweigh the risks.
 - Children and adolescents living with disability may need to consult a health-care professional or other physical activity and disability specialist to help determine the type and amount of activity appropriate for them.

In children and adolescents, higher amounts of sedentary behaviour are associated with the following poor health outcomes: increased adiposity; poorer cardiometabolic health, fitness, and behavioural conduct/pro-social behaviour; and reduced sleep duration.

It is recommended that:

- > Children and adolescents living with disability should limit the amount of time spent being sedentary, particularly the amount of recreational screen time.

Strong recommendation, low certainty evidence

LIMIT

the amount of time spent being sedentary, particularly recreational screen time.



POZITIVA POHYBOVÉ AKTIVITY


- Pravidelná, správně indikovaná, prováděná a kontrolovaná pohybová aktivita má řadu pozitivních vlivů na organismus.

- **SOUTĚŽ:** Vypište do „chatu“ co nejvíce konkrétních pozitiv pravidelné PA

Diskuse: Jak lze zvýšit či udržet PA v době pandemie?



Co všechno může motivovat člověka ke změně životního stylu? Jaké mohou být překážky? Znáte nějaký příklad ze svého okolí?



**FAKTORY
MOTIVACE
A
ADHERENCE
K PA**

faktory spojené se zdravím a jeho vnímáním

- aktuální stav
- Health-Belief Model - vnímaná závažnost choroby
- vliv lékaře či jiné autority a konkrétnost preskripce
- kuřáctví, nadváha

personální faktory

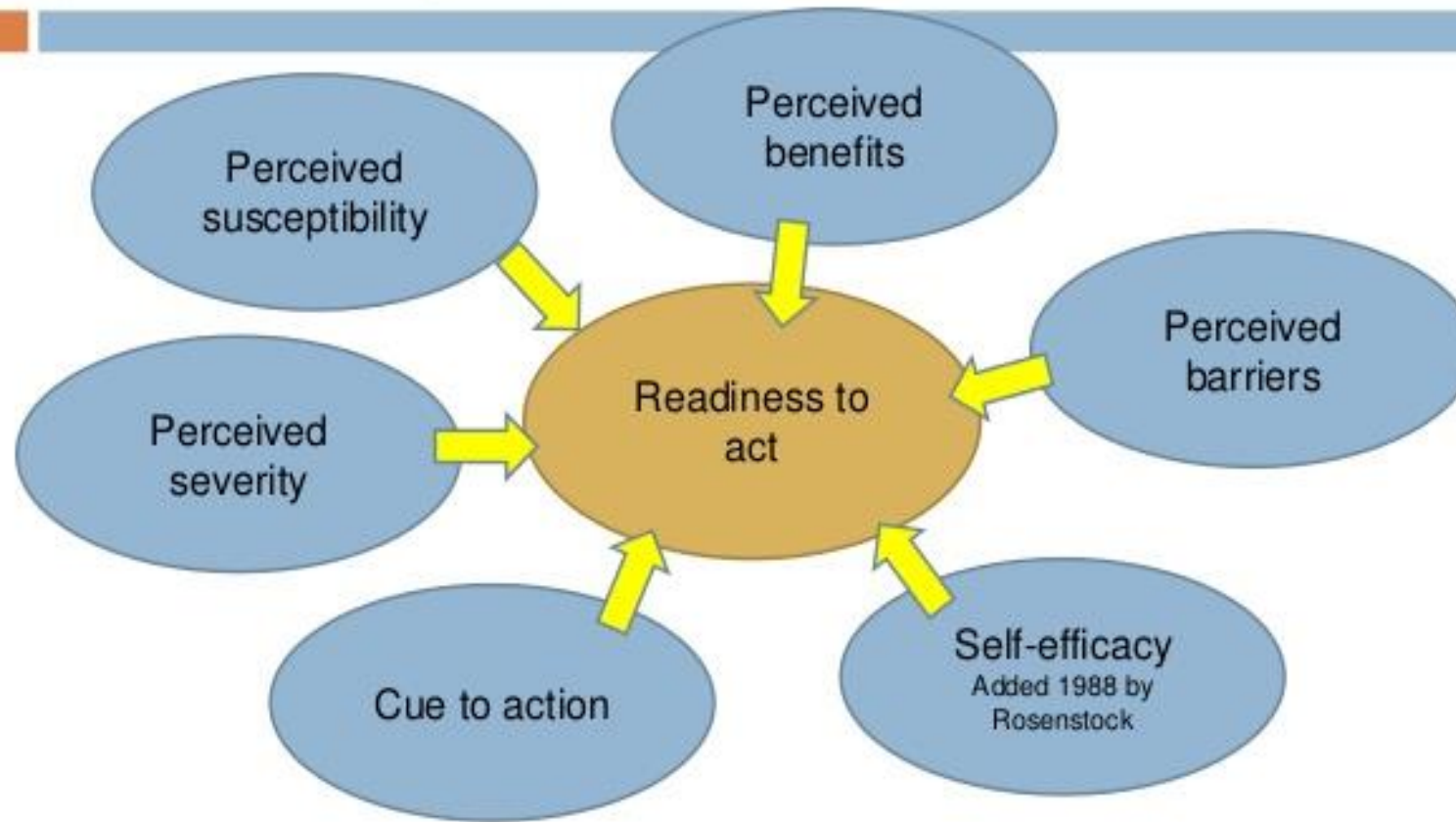
- pohlaví a věk
- deprese, neuroticismus
- přístup ke sportu v rodině (výchova)
- zkušenost s pohybovou aktivitou
- sebevědomí, vnímání vlastních schopností

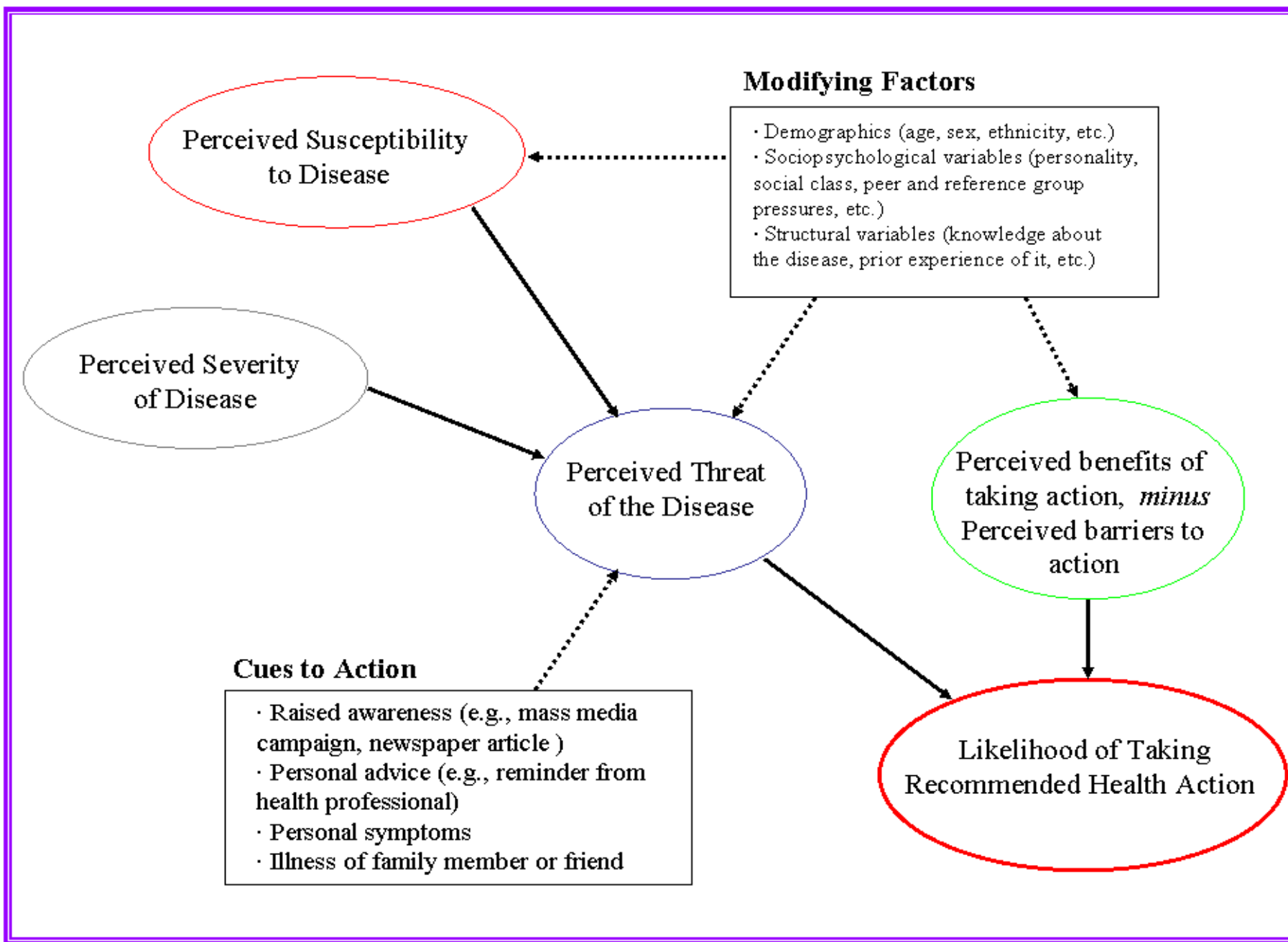
faktory prostředí a programu

- příprava (vzdálenost od bydliště)
- čas, typ cvičení

Health Belief Model (HBM)

(Hochbaum, Rosenstock & Kegels; 1950s)





OBECNÉ ZÁSADY PRO PŘEDPIS PA V PREVENCI CIVILIZAČNÍCH ONEMOCNĚNÍ

- struktura každého cvičení – rozcvičení, hl. část, zklidnění
- posuzování a hodnocení („SOAP method“)
- znát kontraindikace, znát rizika přetížení
- kontrola stavu jedince při zatížení (více „hlídat“ rizikové jedince)
- regenerace a kompenzace
- individuální přístup
- princip FITT
- protahování – součást rozcvičení i důležitost po tréninku
- cvičební deník (např. kolik energie vydám, pokud cvičím kvůli zhubnutí...)

FITT

základní součást pohybových doporučení

FREKVENCE

INTENZITA

TRVÁNÍ

TYP



Typ zatížení

Intenzita cvičení?!

dle SF:

- % maxima – např. 65-85 % SFmax
- % tepové rezervy – viz dále
- cca 10 tepů pod cílovou nebo kolem cílové
- měření před, při – každých 5 min, po
- před cvičením by neměla být SF vyšší než 100/min, při rozcvičení by se měla zvyšovat pozvolna a nepřesáhnout 60 % SFmax, po 5 min cílové zátěže by měla dosáhnout cílové hodnoty, po ukončení aerobního cv. by se měla výrazně snížit, po skončení zklidnění a závěrečném strečinku by měla být nižší než 100

dle subjektivního vnímání: test mluvení, Borgovy škály

Intenzita cvičení?!

Výpočet dle “srdeční rezervy”

$$= (SF_{\max} - SF_{\text{klid}}) \times \text{koef.} + SF_{\text{klid}}$$

- koeficient od 0,55 do 0,75
 - SF_{klid} můžeme změřit
 - $SF_{\max} = 208 - (0,7 \times \text{věk})$
- pokud možno změřená při zátěžovém testu

intenzita musí být dobře tolerována !
záleží na „fázi“ tréninku / cvičení

kontinuální vs. intervalová



SUBJEKTIVNÍ VNÍMÁNÍ ZÁTĚŽE BORGOVA RPE

- někteří jedinci nezvládnou, jiní naopak velmi dobře
- akceptovatelná chyba?
- dobré vysvětlení, správné instrukce
- familierizační protokoly, „anchoring“
- další interferující faktory
- časové změny v průběhu tréninku i v průběhu cvičebního programu
- se škálou i bez škály – důležité je naučit se, na jaké intenzitě zátěže mohou fungovat a na které mají /mohou cvičit

Proč může být důležité subjektivní vnímání tělesné zátěže u jedinců s SP?

Test mluvení

- klient schopen zpěvu
- klient schopen hovoru
- klient sípá / je dušný

Rating of Perceived Exertion (RPE)	
6	No exertion at all
7	Extremely light
8	Very light
10	Light
11	Somewhat hard
12	Hard (heavy)
13	Very hard
14	Extremely hard
15	Maximal exertion

sport-fitness-advisor.com

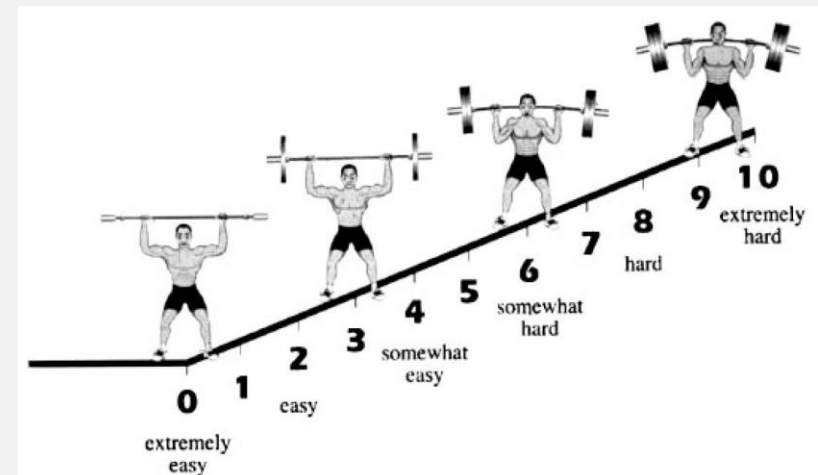


FIGURE 1. OMNI Perceived Exertion Scale for Resistance Exercise.

fabricioboscolo.wordpress.com

JAKÉ ČÍSLO? JAKÁ INTENZITA?

- cílová tréninková zóna pro zvýšení kardiorespirační zdatnosti: RPE 12 - 16 (50 - 85% VO_2max)
- **RPE 12-13 nejvhodnější pro trénink kardiaků a diabetiků**
- percepčně preferovaná zóna (adherence!)

<i>SFmax</i>	<i>VO2max</i>	<i>RPE</i>
< 35 %	< 30 %	< 9
35-59	30-49	10-11
60-79	50-74	12-13
80-89	75-84	14-16
> 90	> 85	> 16

KONTRAINDIKACE

OBECNÉ ABSOLUTNÍ:

- neobvykle velká únava či slabost
- závažný zánět infekční i neinfekční
- akutní úraz
- krvácení, šok

OBECNÉ RELATIVNÍ:

- onkologické onemocnění
- neurologické a smyslové onemocnění

INTERNÍ ONEMOCNĚNÍ

- aktuálně dekompenzované metab. choroby
- akutní zánět žil
- akutní IM, CMP, myokarditida atd.
- nestabilní angina pectoris
- závažnější srdeční vady a poruchy rytmu
- srdeční aneurysma, srdeční selhání
- dekompenzovaný DM (glykémie pod 5 či nad 14 mmol/l)
- neléčená či labilní hypertenze (klid TK nad 160/100)

ACSM POSITION STAND: QUANTITY AND QUALITY OF EXERCISE FOR DEVELOPING AND MAINTAINING CARDIORESPIRATORY, MUSCULOSKELETAL, AND NEUROMOTOR FITNESS IN APPARENTLY HEALTHY ADULTS: GUIDANCE FOR PRESCRIBING EXERCISE

- aerobní trénink střední intenzity ≥ 30 min/denně aspoň 5 x týdně (= ≥ 150 min/týden) nebo
- aerobní trénink vysoké intenzity ≥ 20 min/denně aspoň 3 x týdně (≥ 75 min/týden), nebo
- jejich kombinace s celkovým výdejem $\geq 500-1000$ MET · min/týden
- 2-3 x týdně odporový trénink pro každou z velkých svalových skupin
- cvičení pro udržení rovnováhy, agility a koordinace
- udržení rozsahu pohybu – protahovací cvičení pro všechny skupiny zkrácených svalů aspoň 2 x týdně
- **ALE: I ten, kdo není schopen akceptovat či splnit tyto cíle, mohou stále profitovat i z nižšího objemu cvičení**

DALŠÍ MOŽNOSTI PRO UDRŽENÍ ÚROVNĚ PA

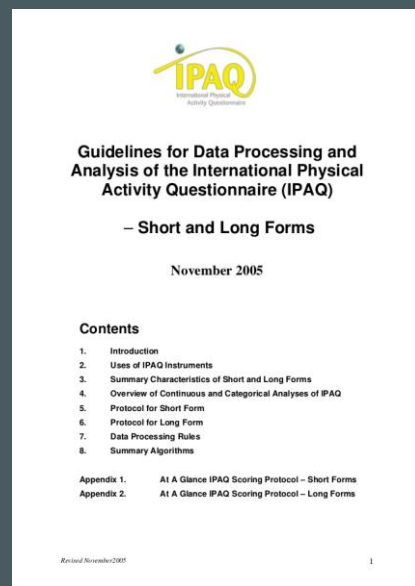
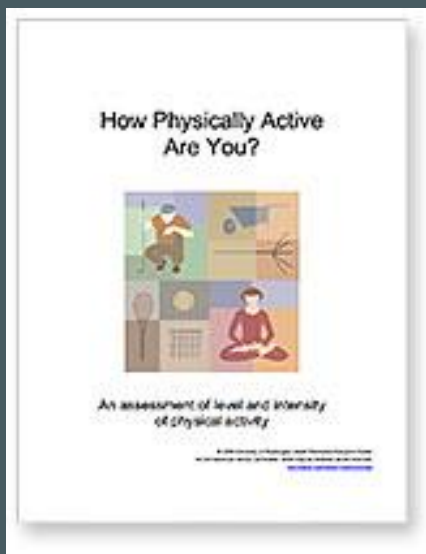
- HABITUÁLNÍ POHYBOVÁ AKTIVITA – PŘESUNY, SCHODY...
- AKČNÍ ZÁBAVA
- KROKOMĚRY A FITNESS NÁRAMKY
- GEOCASHING
- PES 😊



HODNOCENÍ ÚROVNĚ PA

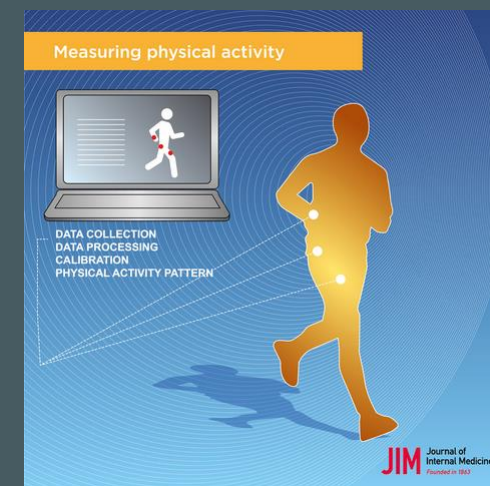
SUBJEKTIVNÍ

- Rozhovor
- Deník - záznam
- Dotazník IPAQ
- Dotazník RAPA



OBJEKTIVNÍ

- Krokoměr
- Akcelerometr
- Multisenzor
- Monitor SF
- Nepřímá kalorimetrie



<https://onlinelibrary.wiley.com/>

Jaký je rozdíl mezi krokoměrem a akcelerometrem?

Je to důležité u OSP?

<https://depts.washington.edu/hprc/resources/products-tools/rapa/>

HODNOCENÍ ÚROVNĚ PA – OSOBY S MÍŠNÍ LÉZÍ

SUBJEKTIVNÍ

- The Physical Activity Recall Assessment for People with Spinal Cord Injury (PARA-SCI)
- Physical Activity Scale for Individuals with Physical Disabilities (PASIPD)
- The Leisure Time Exercise Questionnaire (LTEQ)
- Disability Sport Participation Questionnaire (DSPQ)
- Barriers to Physical Exercise and Disability (BPED)
- Sports Participation Questionnaire (SPQ).

OBJEKTIVNÍ

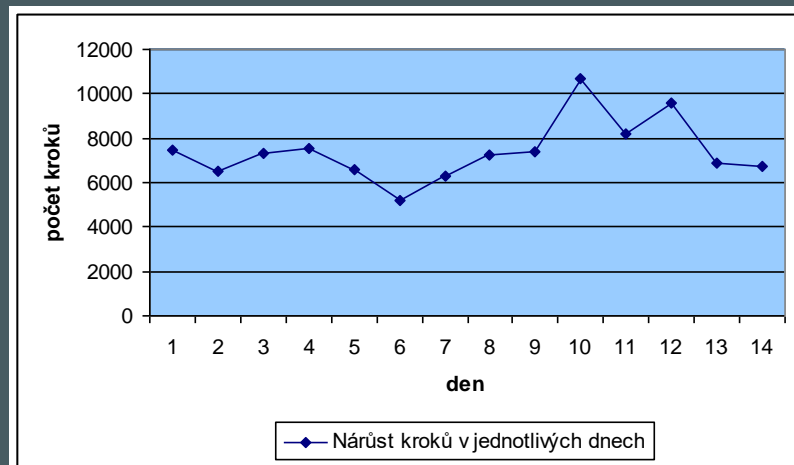
použití akcelerometru ActiGraph GT3X+ - měří pohyb ve třech osách, měří frekvenci a délku pohybu. Akcelerometr ukládá průměrné záznamy v minutových intervalech, tím je také možné zjistit intenzitu pohybové aktivity (nízká, střední a vysoká), kterou vykonává testovaná osoba (Štěpánová, 2017, Neubergová 2019)



PODPORA ZVÝŠENÍ HABITUÁLNÍ PA POMOCÍ KROKOMĚRŮ

Kolik kroků stačí?
Obvyklá doporučení:

- 10 000 / denně
- + 3000 – 4000 k bazálu (ADL) denně
- + 30 % (začátečníci 15 %) k bazálu



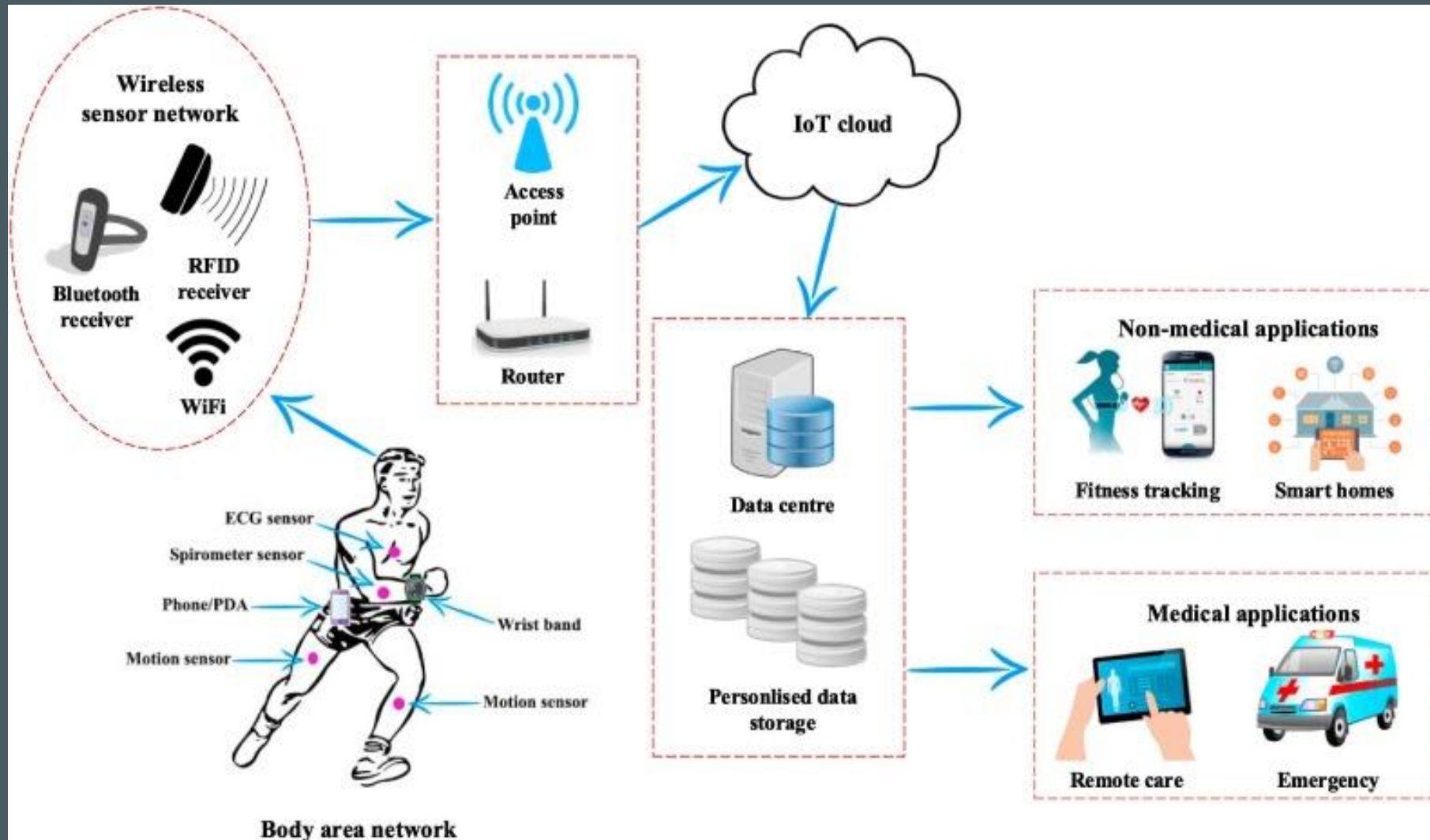
Praktické problémy

- ✓ Místo nošení?
- ✓ BMI?
- ✓ Rychlost chůze?
- ✓ Poruchy chůze?
- ✓ Délka kroku?
- ✓ Akceptovatelná chyba?
- ✓ Chyba v MHD?



TECHNIKA JDE VPŘED

WIRELESS SENSOR NETWORK IN PHYSICAL ACTIVITY RECOGNITION AND MONITORING



PŘÍKLAD FUNKČNÍHO SYSTÉMU ZALOŽENÉHO NA VARIABILITĚ SF

Základní princip

Monitoring - ANS věk a profil - Dotazníky - Pohybový plán - Řízení aktivity pomocí aplikace a wearables - Plnění plánu

