VŠEOBECNÁ FAKULTNÍ NEMOCNICE V PRAZE

1. LÉKAŘSKÁ FAKULTA Univerzita Karlova

Režimová opatření u pacientů se srdečním selháním

MUDr. Michal Širanec

VŠEOBECNÁ FAKULTNÍ NEMOCNICE V PRAZE

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Published Under the Auspices of The Board of Trustees

THE JOURNAL of the American Medical Association

JAMA

VOL 183, NO 2, Jan 12, 1963

Value of Prolonged Bed Rest in Management of Cardiomegaly

George E. Burch, MD, John J. Walsh, MD, and William C. Black, MD, New Orleans

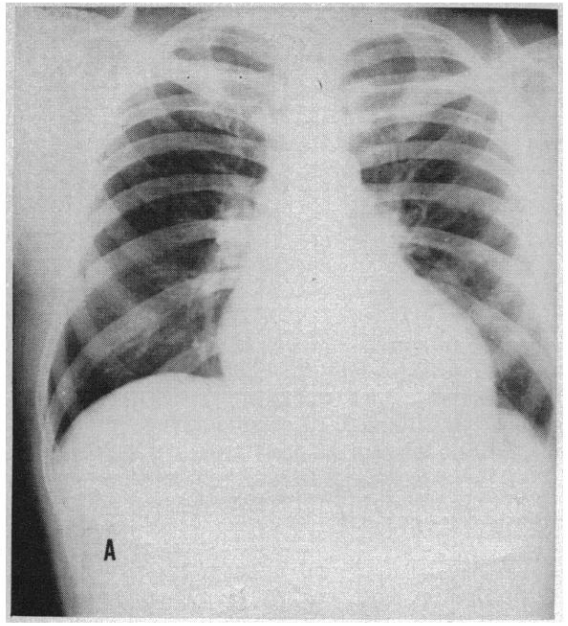


Fig 2.—*A*, Chest x-rays of 46-year-old man on Dec 13, 1960, at admission to study program.

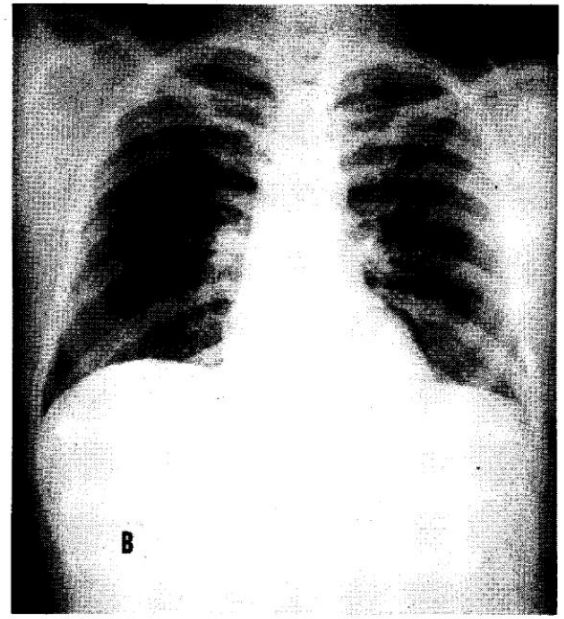


Fig 2.—*B*, X-rays on Aug 11, 1961, after eight months of bed rest. He has since returned to work and remains asymptomatic.

- **1963**
- **prolonged bed rest** (+digitalis and diuretics)
- **11/21** patients showed **return of heart size to normal**
- **recovery by natural mechanisms of repair completely unknown to us**

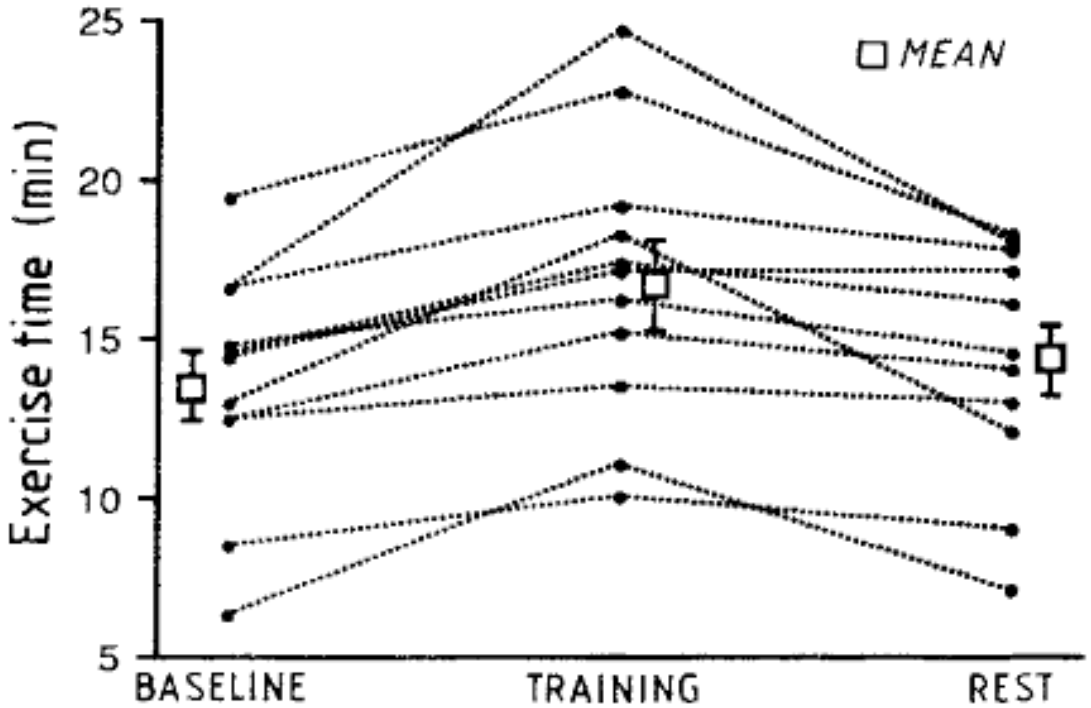
Změna paradigmatu

Effects of physical training in chronic heart failure

ANDREW J. S. COATS STAMATIS ADAMOPOULOS
THEO E. MEYER JAMES CONWAY PETER SLEIGHT

Thus home-based physical training programmes are feasible even in severe chronic heart failure and have a beneficial effect on exercise tolerance, peak oxygen consumption, and symptoms. The commonly held belief that rest is the mainstay of treatment of chronic heart failure should no longer be accepted.

Lancet 1990; **335**: 63–66.



Individual and mean changes in exercise time.

Coats A.J. et al., Lancet.1990 Jan 13;335(8681):63-6.

ESC European Society of Cardiology

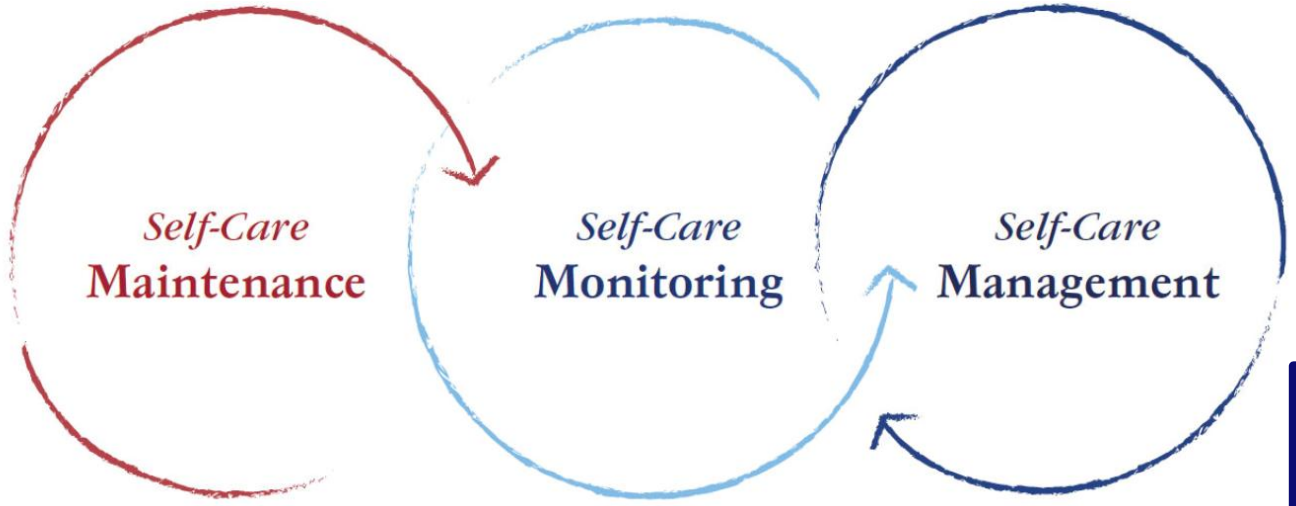
European Journal of Heart Failure (2021) **23**, 157–174
doi:10.1002/ejhf.2008

POSITION PAPER

Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology

Tiny Jaarsma[1,2]*, Loreena Hill[3], Antoni Bayes-Genis[4], Hans-Peter Brunner La Rocca[5], Teresa Castiello[6], Jelena Čelutkienė[7], Elena Marques-Sule[8], Carla M. Plymen[9], Susan E. Piper[10], Barbara Riegel[11], Frans H. Rutten[12], Tuvia Ben Gal[13], Johann Bauersachs[14], Andrew J.S. Coats[15], Ovidiu Chioncel[16], Yuri Lopatin[17], Lars H. Lund[18], Mitja Lainscak[19], Brenda Moura[20], Wilfried Mullens[21], Massimo F. Piepoli[22,23], Giuseppe Rosano[24], Petar Seferovic[25,26], and Anna Strömberg[1,27]

Klíčové komponenty „self-care“



Udržení fyzické a emoční stability

Dieta, restrikce tekutin, kouření, alkohol, vakcinace, spánek, pohybová aktivita, užívání medikace, psychické zdraví, cestování, volný čas, řízení vozidel, sexuální aktivita

Pozorování změn příznaků a známek

Varovné příznaky

Reakce na změny příznaků a známek

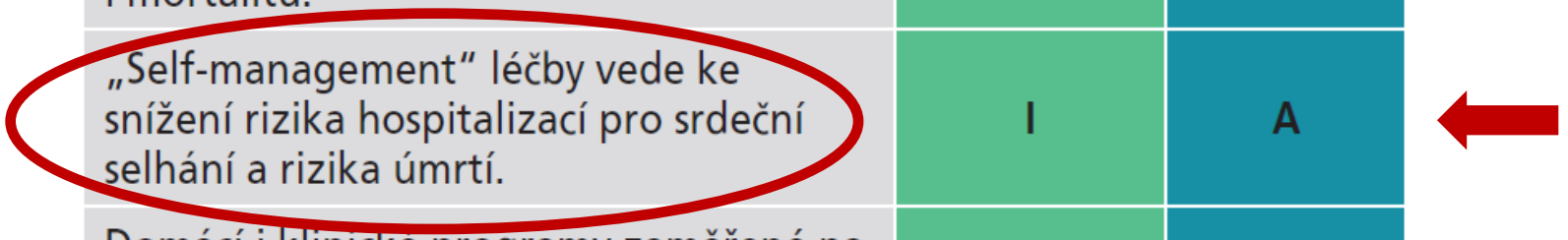
Úprava dávky diuretik, restrikce tekutin, klidový režim, kontakt s odborníkem

Jaarsma T, et al. Eur J Heart Fail. 2021 Jan;23(1):157-174.

HF Guidelines ESC a ČKS

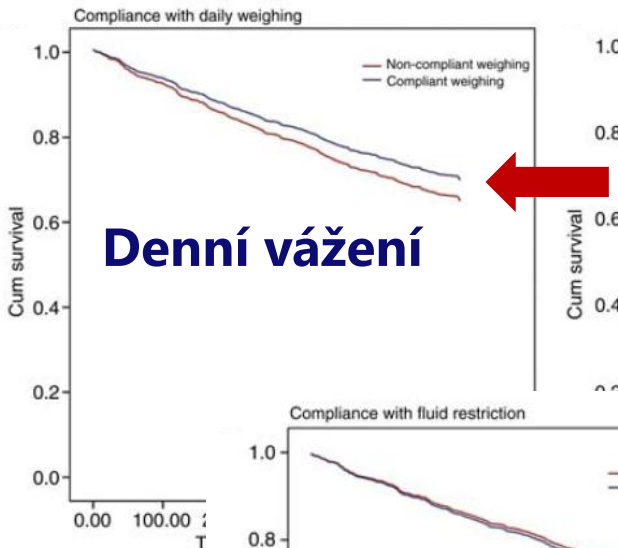
Multidisciplinární intervence doporučené pro léčbu chronického srdečního selhání

Doporučení	Třída doporučení	Úroveň důkazů
Doporučuje se zařadit pacienty se srdečním selháním do programu multidisciplinární péče s cílem snížit riziko hospitalizace pro srdeční selhání i mortalitu.	I	A
„Self-management" léčby vede ke snížení rizika hospitalizací pro srdeční selhání a rizika úmrtí.	I	A
Domácí i klinické programy zaměřené na vedení léčby srdečního selhání zlepšují výsledky a doporučují se ke snížení rizika hospitalizací pro srdeční selhání a rizika úmrtí.	I	A



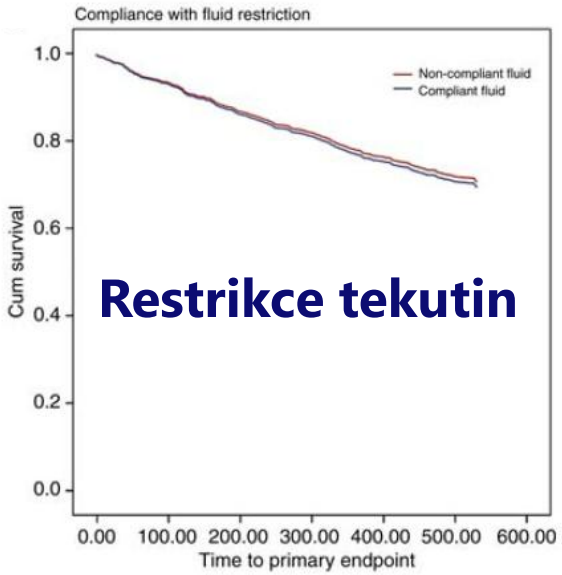
Málek F, et al. Cor Vasa 2022;64:121–162.

Přínos režimových opatření

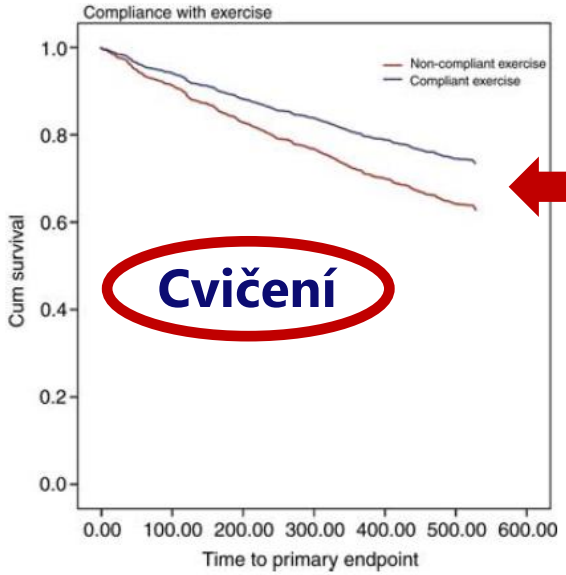


Denní vážení

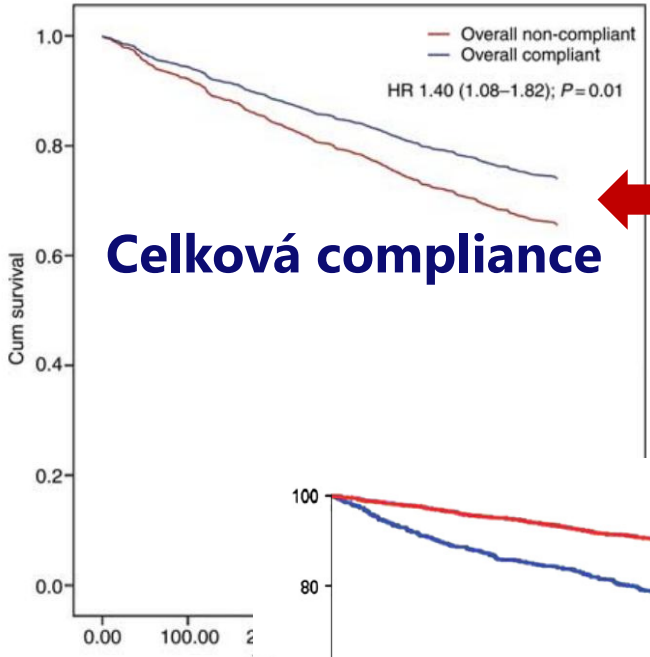
Dieta



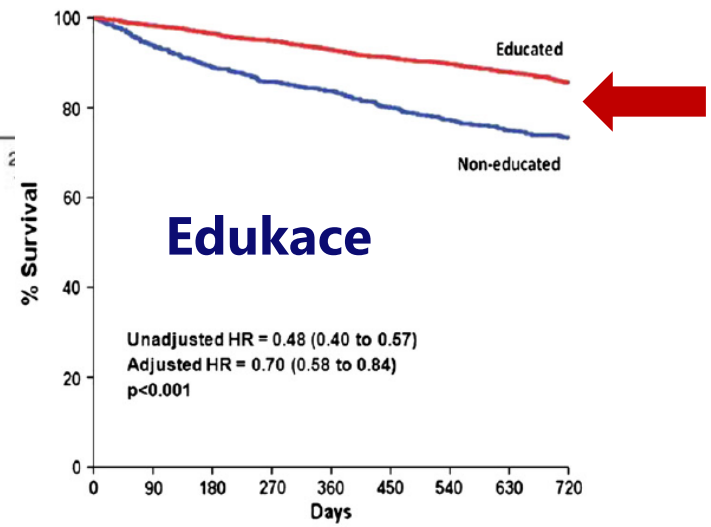
Restrikce tekutin



Cvičení



Celková compliance



Edukace

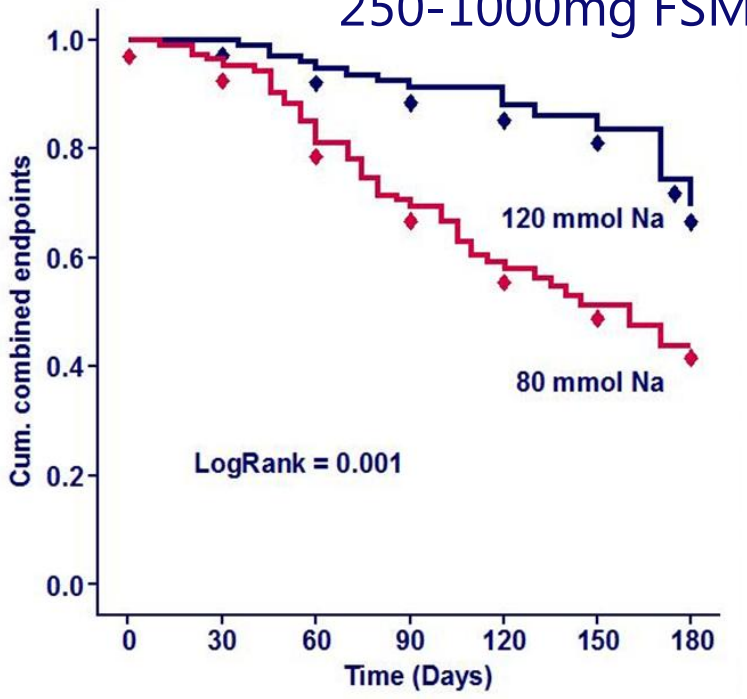
Van der Wal M.H.L., Euro Heart J (2010) 31, 1486–1493.; Juillière Y., et al. Int J Cardiol. 2013 Sep 20;168(1):388-95.

Restrikce natria a tekutin je efektivní u CHSS

120 vs. 80 mmol Na/den

1L tekutin/den

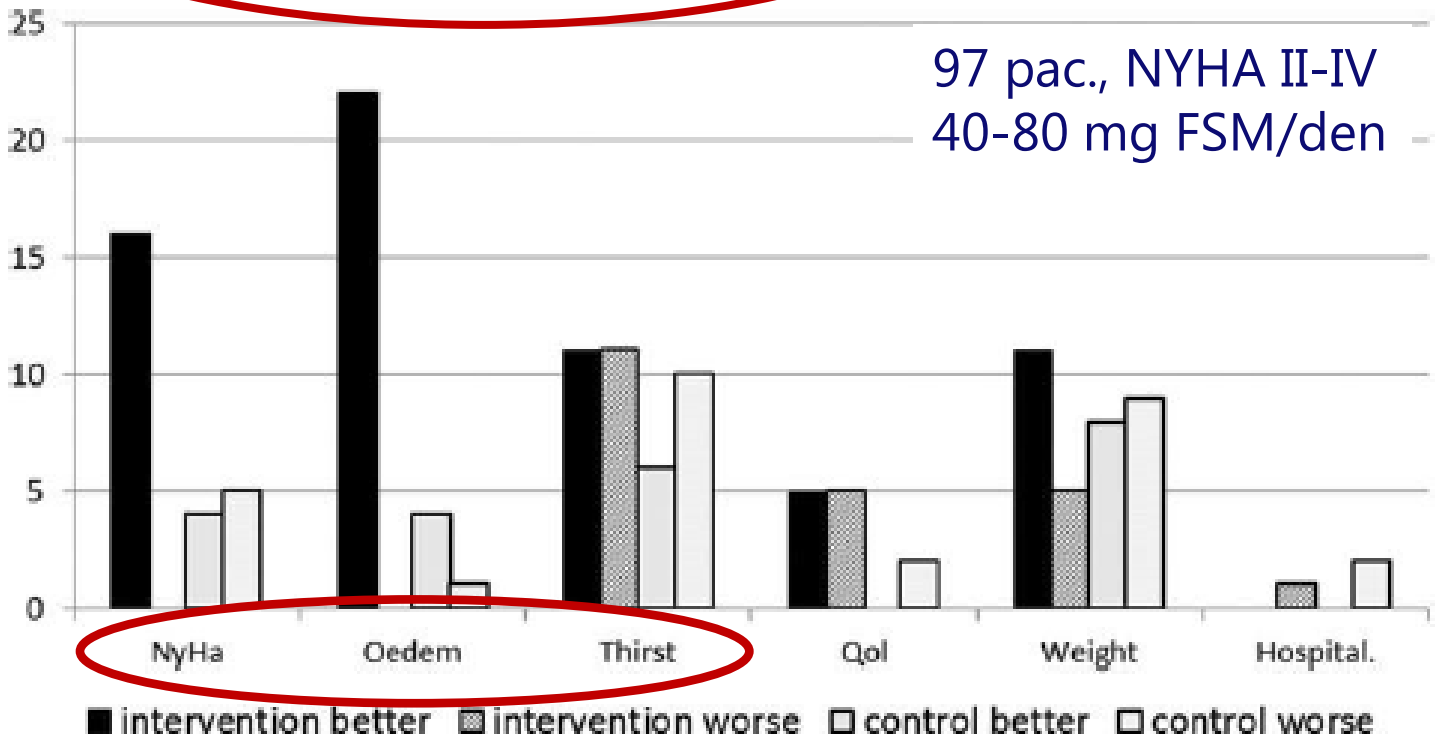
232 pac., NYHA II-IV
250-1000mg FSM/den



2-3 g Na/den (cca 5g NaCl)

1,5 L tekutin/den

97 pac., NYHA II-IV
40-80 mg FSM/den



Paterna S, et al. Clin Sci (Lond). 2008 Feb;114(3):221-30.; Philipson H, et al. Eur J Heart Fail. 2013 Nov;15(11):1304-10.

Racionální restrikce natria a tekutin

Snížený příjem Na +/- tekutin, 9 studií, 479 pacientů, **NYHA a kongesce**

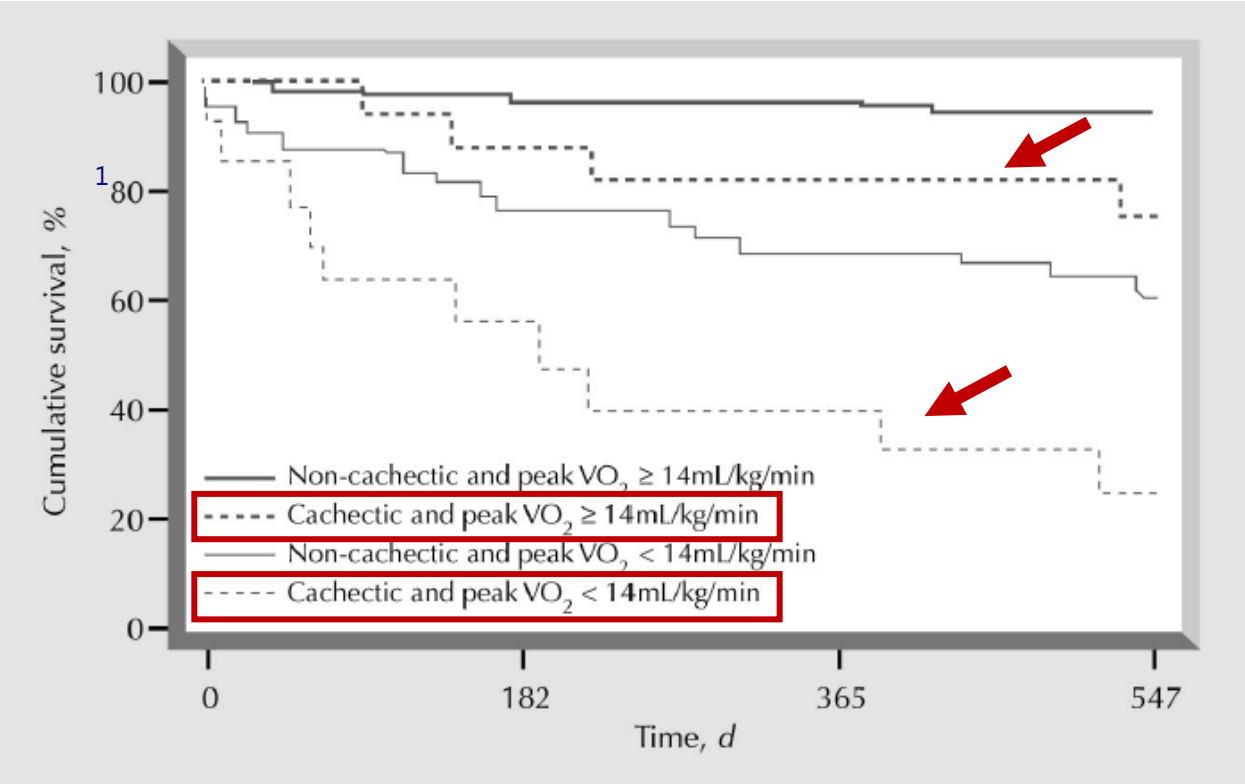
Source	Country	No. of Participants	Difference, Intervention vs Control
Inpatient Studies			
Aliti et al,[15] 2013[a]	Brazil	75	No difference
Velloso et al,[21] 1991[b]	Brazil	32	No difference
Outpatient Studies			
Alvelos et al,[16] 2004[c]	Portugal	24	No difference
Colín-Ramírez et al,[17] 2004[c]	Mexico	65	Favors intervention ←
Colín-Ramírez et al,[18] 2015[c]	Canada	38	No difference
Philipson et al,[19] 2013[c]	Sweden	97	Favors intervention ←
Colín-Ramírez et al,[18] 2015[d]	Canada	38	No difference
Hummel et al,[22] 2017[d]	United States	66	No difference

➢ **GL 2021** – tekutiny 1,5-2,0 L/den u závažného HF / hyponatrémie, NaCL< 5 g/den

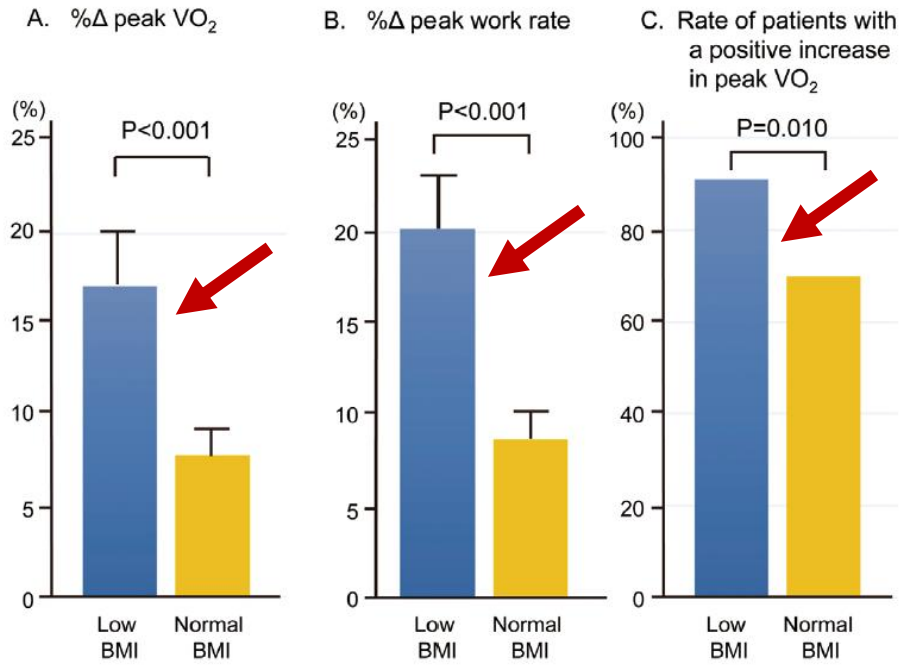
Mahtani KR, et al. *JAMA Intern Med* 2018;178:1693–1700.; McDonagh TA, et al. Eur Heart J. 2021 Sep 21;42(36):3599-3726.

Optimalizace nutričního stavu

- kachexie 5-15%, **malnutrice až 60%**
- **prevence**, nutriční podpora



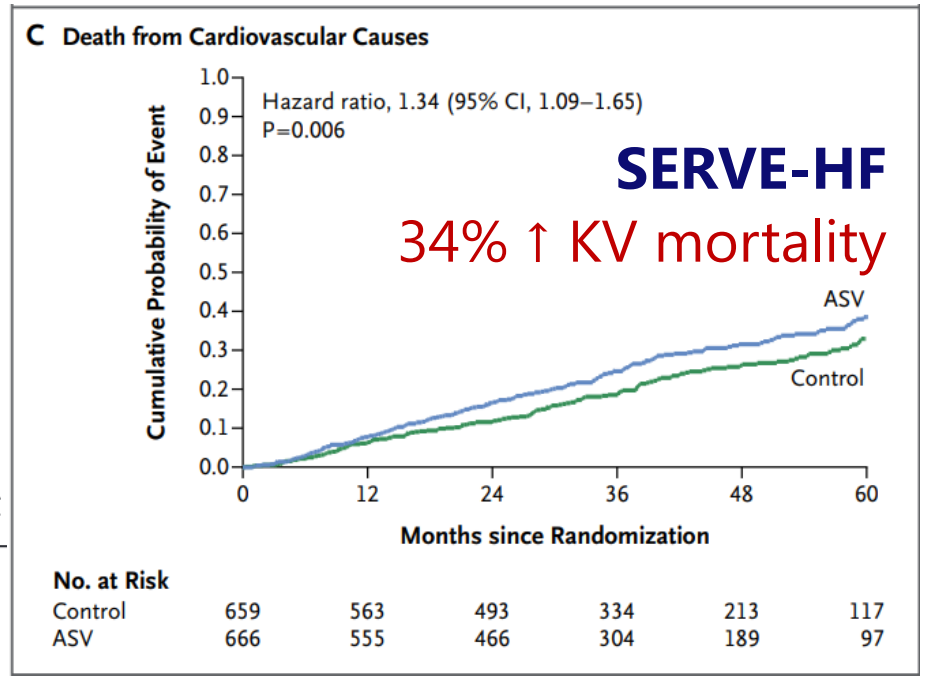
- **větší efekt cvičení u ↓ BMI**
- **HFrEF**, EF LK 27% (±11)
- **BMI <18.5 kg/m2** vs. 18.5-25 kg/m2

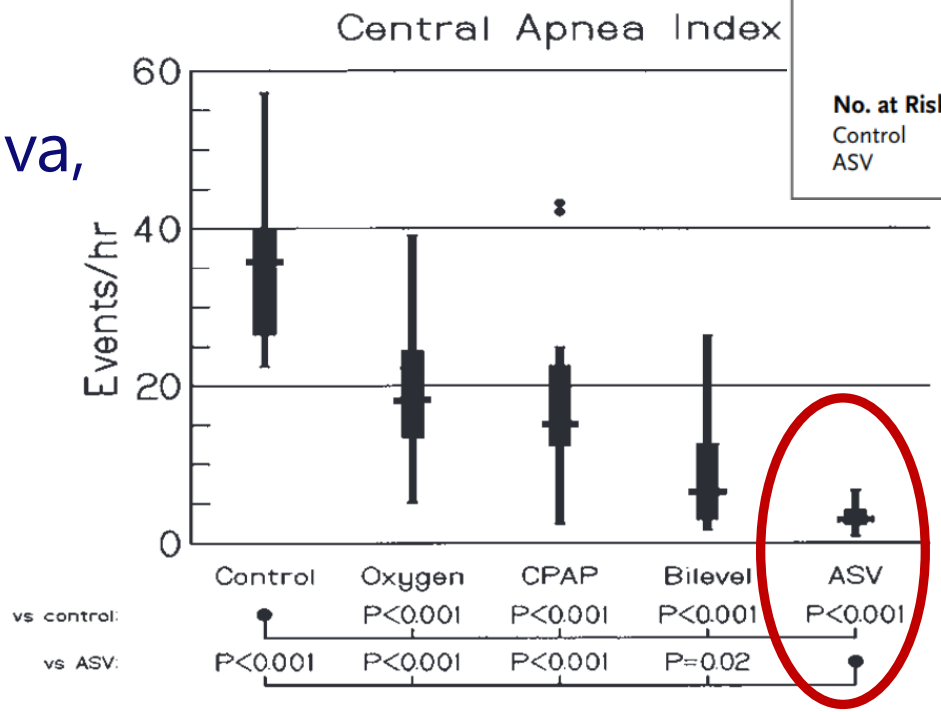


Yoshihiro J. Akashi, Curr Heart Fail Rep. 2005 Dec;2(4):198-203. ; Marume K. et al., Circ J. 2019 Jan 25;83(2):334-341

Úprava spánku

- **Spánková hygiena**
  - efekt cvičení, nálady, diuretik
- **Spánkové poruchy**
  - ~ 50% pac.
  - **OSA** → životospráva, CPAP, BiPAP, ASV
  - **CSA** → ?





Pearse SG, et al. Eur J Heart Fail. 2016 Apr;18(4):353-61.; Cowie MR, et al., N Engl J Med. 2015 Sep 17;373(12):1095-105.

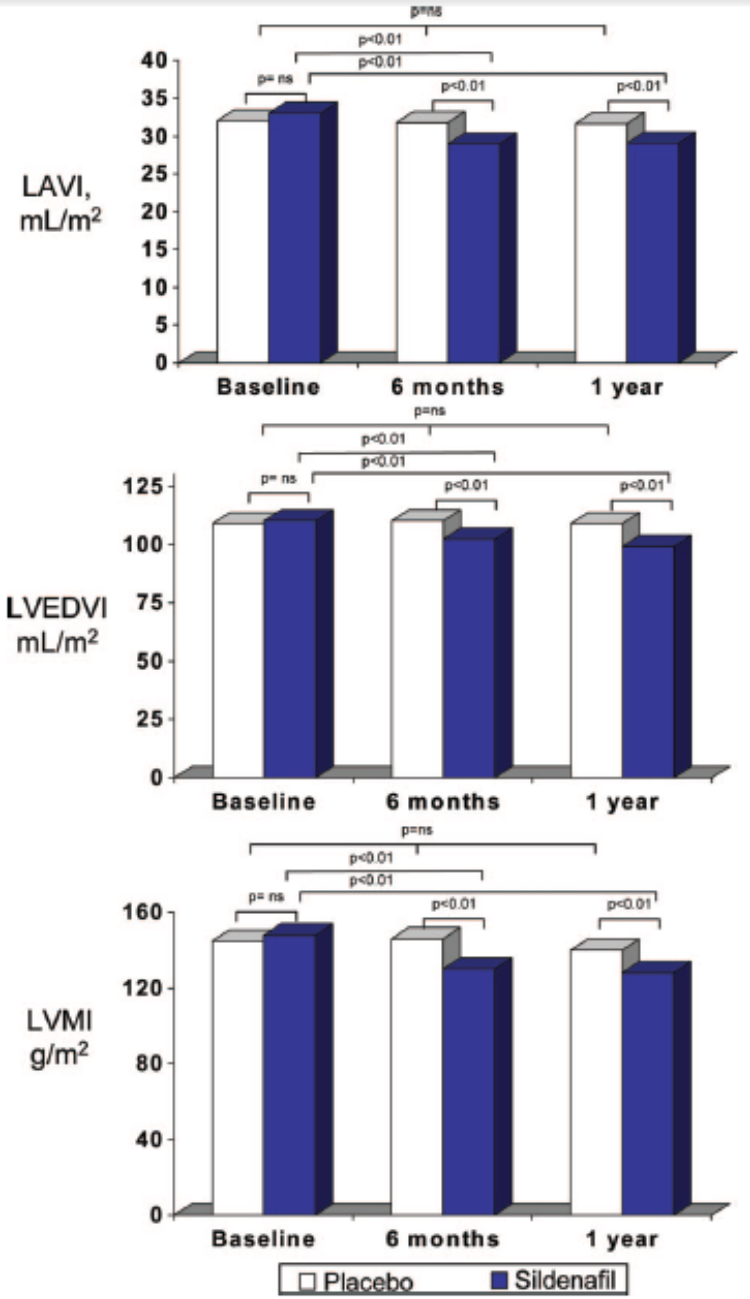
Obnovení sexualní aktivity

- Problémy → 60-87% pac.
- Erektilní dysfunkce → 81% mužů
- **Faktory** – medikace, ICD, symptomy, psychologické
- **Stabilní NYHA I a II bez omezení (PDE5i)**
- Ne → dekompenzace, pokročilá NYHA III a IV
- **Cvičení**

- **Ženy ve fertilním věku**

  EFLK < 30%, NYHA III–IV

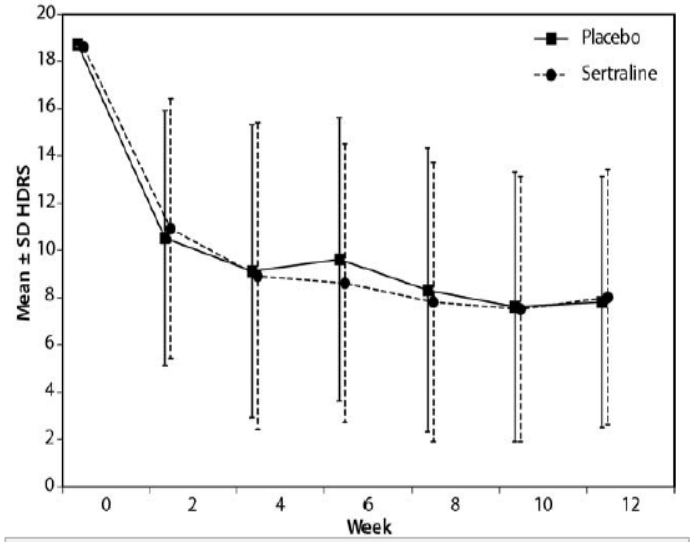
  → **ochrana před otěhotněním** (I C)



Jaarsma T., ESC Heart Fail. 2017 Feb;4(1):3-7.; Guazzi M., et al. Circ Heart Fail. 2011 Jan;4(1):8-17.; McDonagh TA, et al. Eur Heart J. 2021 Sep 21;42(36):3599-3726.

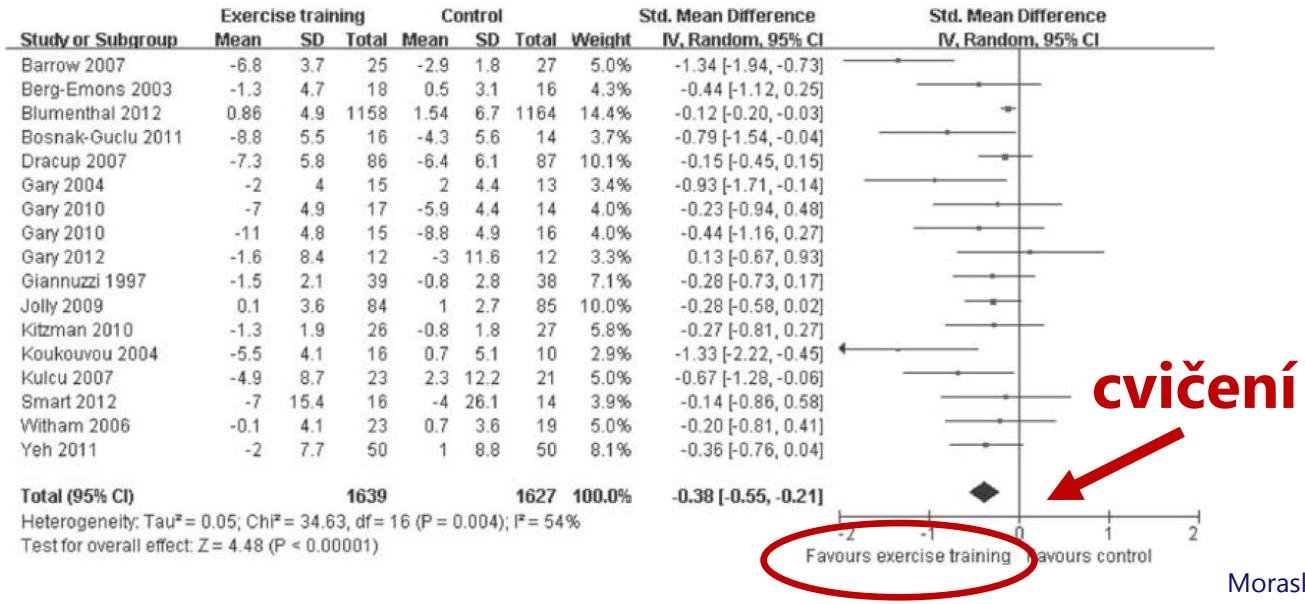
Deprese - významný faktor prognózy

- 20% pacientů s CHSS (60% depresivní symptomy)
- ↓ **compliance and 'self-care'**
- 4x ↑ all-cause mortalita, 2x ↑ riziko hospitalizací



Change in Hamilton Depression Rating Scale From Baseline to Week 12 scores. p=0,89

Meta-analýza: deprese u pacientů s CHSS



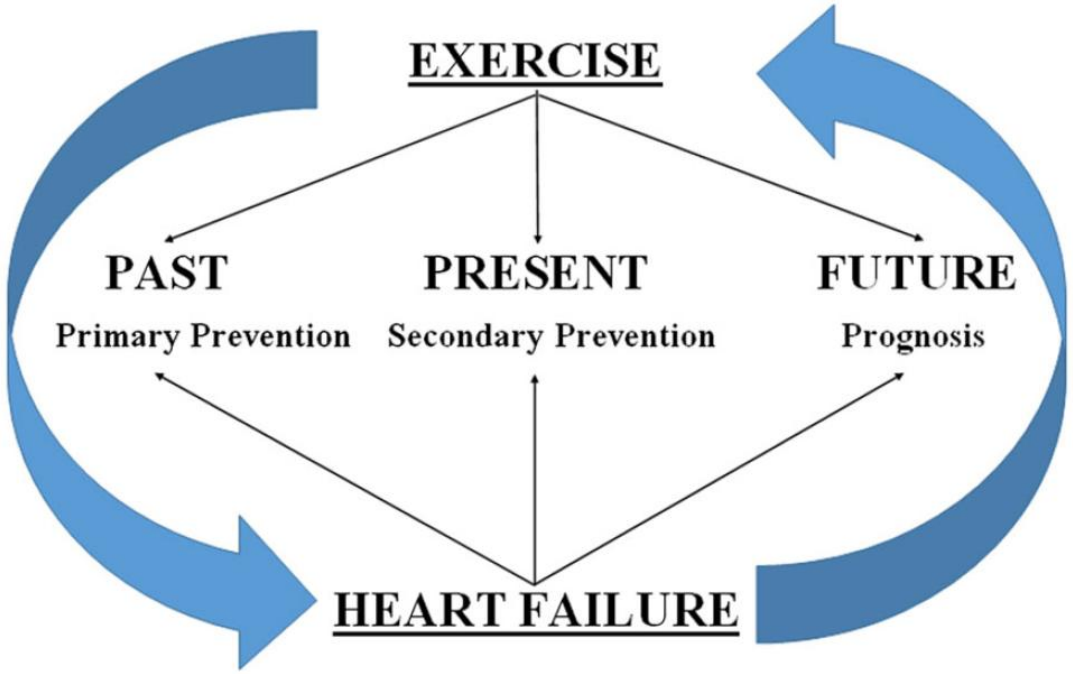
Study or Subgroup	Exercise training Mean	SD	Total	Control Mean	SD	Total	Weight	Std. Mean Difference IV, Random, 95% CI
Barrow 2007	-6.8	3.7	25	-2.9	1.8	27	5.0%	-1.34 [-1.94, -0.73]
Berg-Emons 2003	-1.3	4.7	18	0.5	3.1	16	4.3%	-0.44 [-1.12, 0.25]
Blumenthal 2012	0.86	4.9	1158	1.54	6.7	1164	14.4%	-0.12 [-0.20, -0.03]
Bosnak-Guclu 2011	-8.8	5.5	16	-4.3	5.6	14	3.7%	-0.79 [-1.54, -0.04]
Dracup 2007	-7.3	5.8	86	-6.4	6.1	87	10.1%	-0.15 [-0.45, 0.15]
Gary 2004	-2	4	15	2	4.4	13	3.4%	-0.93 [-1.71, -0.14]
Gary 2010	-7	4.9	17	-5.9	4.4	14	4.0%	-0.23 [-0.94, 0.48]
Gary 2010	-11	4.8	15	-8.8	4.9	16	4.0%	-0.44 [-1.16, 0.27]
Gary 2012	-1.6	8.4	12	-3	11.6	12	3.3%	0.13 [-0.67, 0.93]
Giannuzzi 1997	-1.5	2.1	39	-0.8	2.8	38	7.1%	-0.28 [-0.73, 0.17]
Jolly 2009	0.1	3.6	84	1	2.7	85	10.0%	-0.28 [-0.58, 0.02]
Kitzman 2010	-1.3	1.9	26	-0.8	1.8	27	5.8%	-0.27 [-0.81, 0.27]
Koukouvou 2004	-5.5	4.1	16	0.7	5.1	10	2.9%	-1.33 [-2.22, -0.45]
Kulcu 2007	-4.9	8.7	23	2.3	12.2	21	5.0%	-0.67 [-1.28, -0.06]
Smart 2012	-7	15.4	16	-4	26.1	14	3.9%	-0.14 [-0.86, 0.58]
Witham 2006	-0.1	4.1	23	0.7	3.6	19	5.0%	-0.20 [-0.81, 0.41]
Yeh 2011	-2	7.7	50	1	8.8	50	8.1%	-0.36 [-0.76, 0.04]
Total (95% CI)			**1639**			**1627**	**100.0%**	**-0.38 [-0.55, -0.21]**

Heterogeneity: Tau² = 0.05; Chi² = 34.63, df = 16 (P = 0.004); I² = 54%
Test for overall effect: Z = 4.48 (P < 0.00001)

- **SADHART-CHF**
  sertralin 50–200 mg/den vs. pcb
- **MOOD-HF**
  escitalopram 20mg vs. pcb

Moraska A. R., et al., Circ Heart Fail. 2013 May 1; 6(3): 387-394.; J Am Coll Cardiol 2010;56:692–9.; Piepenburg S. M., et al. Circ Heart Fail. 2015; 8: 464-472 ; Tu RH, et al. Eur J Heart Fail. 2014 Jul;16(7):749-57.

Cvičení / RHB u chronického srdečního selhání



Recommendations for exercise rehabilitation in patients with chronic heart failure

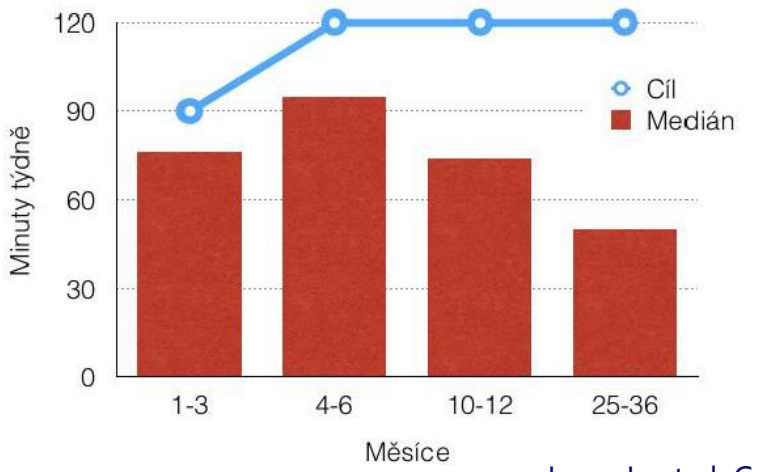
Recommendations	Class[a]	Level[b]
Exercise is recommended for all patients who are able in order to improve exercise capacity, QOL, and reduce HF hospitalization.[c] 324–328,335–337	I	A
A supervised, exercise-based, cardiac rehabilitation programme should be considered in patients with more severe disease, frailty, or with comorbidities.[95,324–327,338]	IIa	C

Cattadori G, et al. ESC Heart Fail. 2018 Apr;5(2):222-232.; McDonagh TA, et al. Eur Heart J. 2021 Sep 21;42(36):3599-3726.

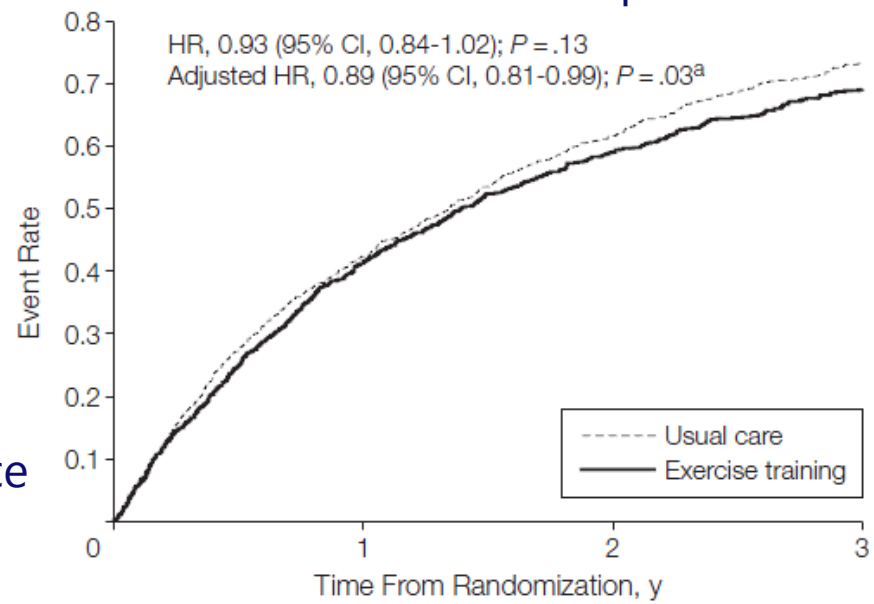
Účinnost, bezpečnost a adherence cvičení

- trend ke ↓ mortality při trvání > 1 rok
- ↓ rizika hospitalizací (do 12 měs.)
- zlepšení HRQoL
- prokázaná bezpečnost
- nízká dlouhodobá adherence

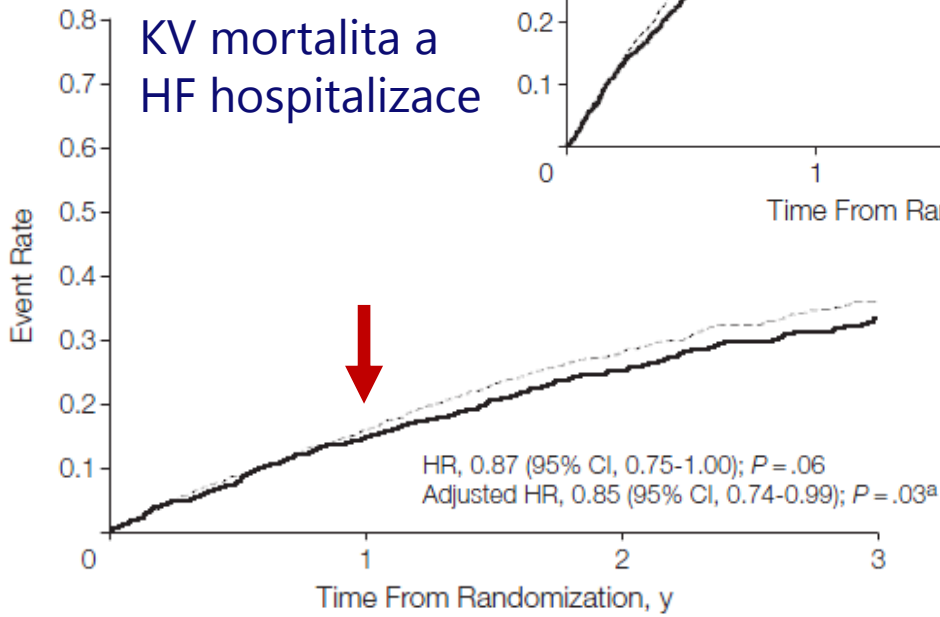
HF-ACTION (>3m 29-42%)



Celková mortalita a hospitalizace



KV mortalita a HF hospitalizace



Long L, et al. Cochrane Database Syst Rev. 2019 Jan 29;1(1):CD003331.; O'Connor Ch. M., et al., JAMA. 2009 Apr 8;301(14):1439-50.

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Preskripce pohybové aktivity

- **2020 ESC Guidelines**
- **FITT** (frequency, intensity, time and type)
- **Riziková stratifikace**
- **Kardiopulmonální zátěžový test**
  - sub/max. zátěž. kapacita, VO2peak
- **Ergometrie / 6MWT**
  - HR rezerva
  - hodnocení vnímané zátěže (Borg RPE)
  - trénink: 40-70% HRR, 10-14/20 Borg RPE
- **Re-testování**

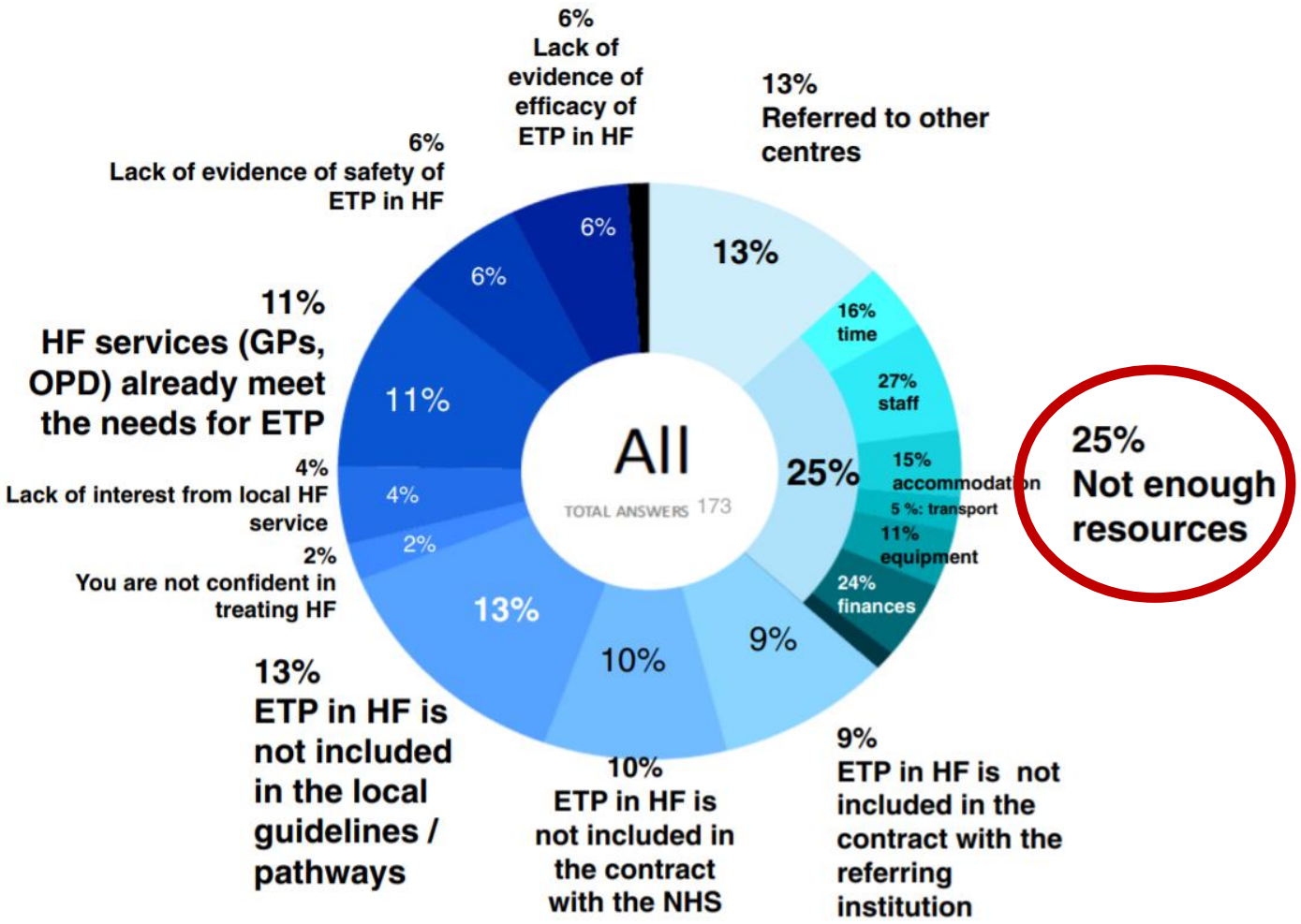
	Aerobic exercise	Resistance exercise
Frequency	3–5 days/week, optimally daily	2–3 days/week; balance training daily
Intensity	40–80% of VO_{2peak}	Borg RPE <15 (40–60% of 1RM)
Duration	20–60 min	10–15 repetitions in at least 1 set of 8–10 different upper and lower body exercises
Mode	Continuous or interval	
Progression	A progressively increasing training regimen should be prescribed with regular follow-up controls (at least every 3–6 months) to adjust the duration and the level of the exercise to the reached level of tolerance	A progressively increasing training regimen should be prescribed with regular follow-up controls (at least every 3–6 months) to adjust the duration and the level of the exercise to the reached level of tolerance

Pelliccia A, et al. Eur Heart J. 2021 Jan 1;42(1):17-96.

Implementace kardiorehabilitace u CHSS

- doporučení **I A**
- **ExTraHF survey**
- 41 zemí, 170 center

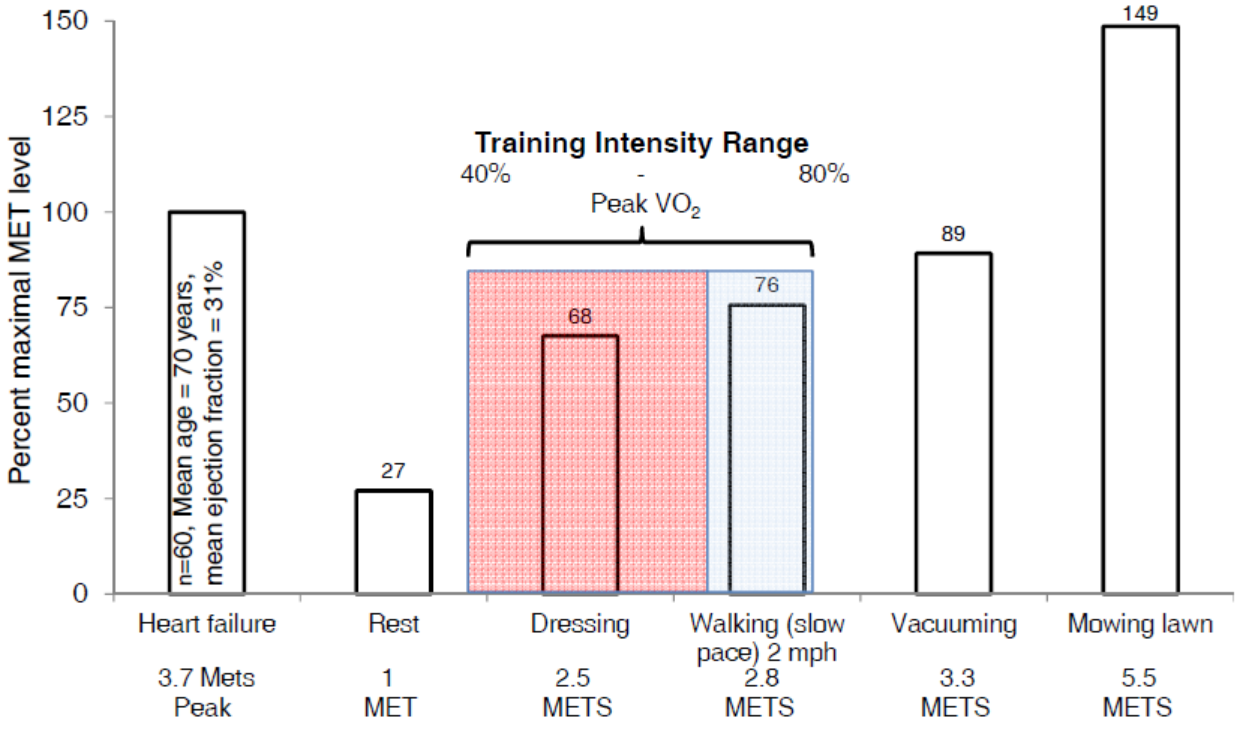
- KR program v 60% center
- < 20% pacientů s CHSS
- závažnost a etiologie CHSS



Piepoli MF. Et al. Eur J Heart Fail. 2015 Jun;17(6):631-8.; Bjarnason-Wehrens B. et al., Eur J Cardiovasc Prev Rehabil. 2010 Aug;17:410-8.

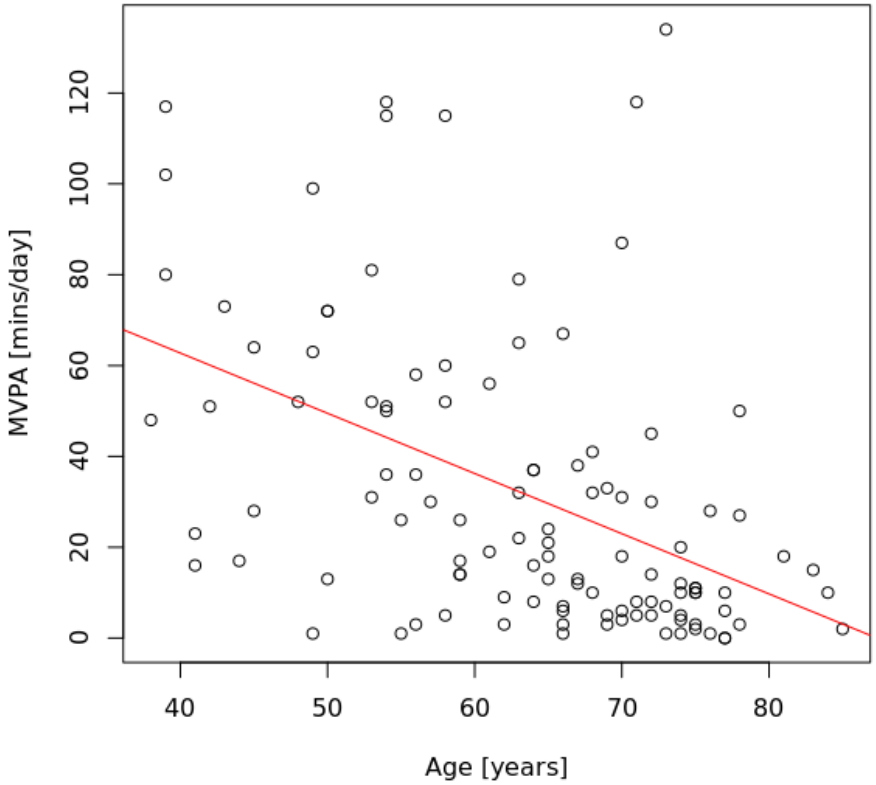
Intenzita cvičení

- chůze 5 km/h – aktivita střední intenzity



3,2 km/h

Age vs. moderate-to-vigorous physical activity (MVPA)



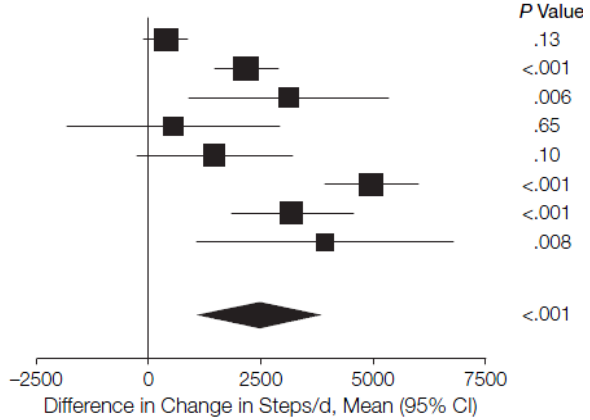
33.8±40.3 min/week of MVPA

Haykowsky M.J. et al., Can J Cardiol. 2016 Oct;32(10S2):S382-S387.; Ainsworth BE, et al. Med Sci Sports Exerc. 2000 Sep;32(9 Suppl):S498-504.

Chůze a krokoměry

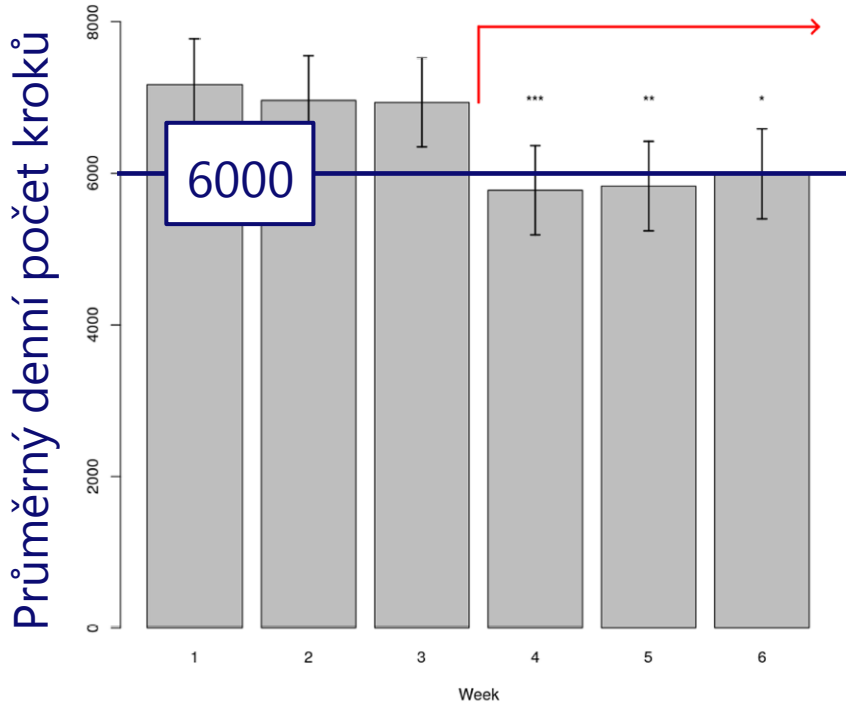
- krokoměry ↑ pohybovou aktivitu a zlepšují zdraví
- realistický cíl
- WATCHFUL studie

Source	Sample Size: Intervention	Sample Size: Control	Difference in Change in Steps/d, Mean (95% CI)	*P* Value
Butler and Dwyer,[17] 2004	17	16	395 (–118 to 908)	.13
Hultquist et al,[19] 2005	31	27	2226 (1488 to 2964)	<.001
Araiza et al,[16] 2006	15	15	3189 (905 to 5473)	.006
de Blok et al,[18] 2006	8	8	567 (–1872 to 3006)	.65
Talbot et al,[23] 2003	17	17	1498 (–300 to 3296)	.10
Moreau et al,[20] 2001	15	9	5066 (4003 to 6129)	<.001
Izawa et al,[14] 2005	24	21	3254 (1851 to 4657)	<.001
Ransdell et al,[21] 2004 and Ormes et al,[22] 2005	28	9	3994 (1050 to 6938)	.008
Summary difference	155	122	2491 (1098 to 3885)	<.001



↑ 2500 kroků/den = ↑ fyzické aktivity o 26.9%
cíl 10 000 kroků

COVID-19 karanténa
↓ o 1134 kroků/den
↓ 16,2 %



***P < 0.001 for comparison with Weeks 1–3; **P < 0.001 for comparison with Week 1 and P < 0.01 for comparison with Weeks 2 and 3; and *P < 0.01 for comparison with Weeks 1 and 2 and P < 0.05 for comparison with Week 3.

Haykowsky M.J. et al., Can J Cardiol. 2016 Oct;32(10S2):S382-S387.; Bravata D. M. et al., JAMA. 2007 Nov 21;298(19):2296-304.

VŠEOBECNÁ FAKULTNÍ NEMOCNICE V PRAZE | 1. LÉKAŘSKÁ FAKULTA Univerzita Karlova

Hybridní / tele- kardiorehabilitace

KR centra → **Domácí prostředí**

- strukturované, supervize
- 8-12 týdnů
- bezpečné, efektivní
- optimální

- **zachování získaných benefitů**
- **tele-/monitorace**
- telefonní kontroly
- motivační nástroje

Domácí prostředí →

- stabilní pacienti
- **bezpečné**
- zlepšení zátěžové kapacity a HRQoL
- manažmĕnt **‘na míru’**
- alternativa k centrové KR

Heindl B, et al. Prog Cardiovasc Dis. 2022 Jan-Feb;70:175-182.; Zwisler AD, et al. Int J Cardiol. 2016 Oct 15;221:963-9.

Efekt délky „self-care“

Meta-analýza 36 RCTs, 8341 pac., disease management program, **edukace, self-care**

Subgroup	Mortality RD (%) (95% CI)	Explained Heterogeneity (%)	Rehospitalization RD (%) (95% CI)
Personal		0	
Personal	3.0 (−6.4; −0.3)		−10.5 (−14.7; −6.2)
Phone	−2.6 (−5.5; 0.3)		−3.6 (−6.8; −0.3)*
Transition management		0	
Yes	−3.1 (−5.4; −0.9)		−8.6 (−12.7; −4.4)
No	−2.6 (−8.1; 2.9)		−6.1 (−9.8; −2.5)
Team		60.0	
Single group	0.3 (−2.3; 2.8)		−7.5 (−10.7; −4.4)
2–3 disciplines	−4.8 (−8.7; −0.9)		−2.5 (−8.7; −3.8)*
Multidisciplinary	−8.6 (−14.0; −3.2)		−18.1 (−23.4; −12.9)*
Country		7.1	
USA	−1.4 (−3.6; 0.8)		−5.8 (−11.0; −0.7)
Non-USA	−4.8 (−8.7; −0.9)		−9.8 (−13.8; −5.7)
Follow-up		34.2	
3 months	−0.2 (−3.8; 3.3)		−10.9 (−17.0; −4.9)
3–9 months	−1.5 (−4.7; 1.7)		−6.2 (−12.0; −0.4)
≥12 months	−6.6 (−10.5; −2.7)		−9.0 (−13.9; −4.0)

DMP, disease management programs; RD, risk difference.
*Statistically significant difference compared to reference group (first line) ($P < .05$).

Göhler A, et al. J Card Fail. 2006 Sep;12(7):554-67.