

Muskelfysiologi & perioperativ muskelfunktion

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- Pre-operativ muskelfunktion
- Effekter på muskel under op
- Postop mu-funktion
- Effekter av träning
 - Före op
 - Efter op



FYSIOTERAPEUTER
Samtalar om
LEVNADSVANOR

Stark inför kirurgi – stark för livet

Kunskapsstöd om levnadsvanor och tillämpning av fysisk träning och andningsträning för patienter som ska genomgå bukkirurgi



Svenska
Läkaresällskapet



LÄKARES
Samtal om
LEVNADSVANOR



Stark för kirurgi – stark för livet

Fysiologiska effekter av träning

- Hjärta
- Kärl - blodtryck
- Koagulation - propprisk
- B-glukos & FFA
- Endokrina effekter
- Stressreaktioner
- Skelettmuskulatur
 - Muskelmassa
 - Angiogenes/mitokondriell biogenes
- CNS

Postop pulmonella komplikationer

Det finns flera gränsvärden som kan användas som prediktorer för hög risk för PPK såsom:

- ≤ 15 ml/kg/min. i maximal syreupptagningsförmåga (VO_{2peak})
- ≤ 250 gångsträcka vid ett 6 minuters gångtest inför lungkirurgi och $< 80W$ på arbetsprov på cykel inför esofagusresektion
- $< 40-60$ av förväntat FEV_1 eller $< 60\%$ i diffusionskapacitet beroende på typ av kirurgi samt < 1 l FEV_1 vid lobektomi eller $< 2,0$ l vid pulmektomi
- < 80 cm H_2O i styrka i in- och utandningsmuskulaturen (maximum inspiratory pressure, MIP och maximum expiratory pressure, MEP)
- rökning motsvarande > 20 pack-år (1 pack-år = 1 pk/dag i ett år).

Pre- and postoperative inspiratory muscle training in patients undergoing cardiac surgery: systematic review and meta-analysis

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Mansueto Gomes Neto^{1,2,3}, Bruno P Martinez⁴,
Helena FC Reis¹ and Vitor O Carvalho^{3,5}

(95% CI 1.9, 7.4, $N = 140$). Patients that received preoperative training had an inspiratory muscle training reduced risk of postoperative pulmonary complications, (RR = 0.6; 95% CI 0.5 to 0.8; $P = 0.0004$, $N = 386$). Postoperative inspiratory muscle training resulted in improvement in inspiratory pressure of 16.5 cm H₂O (95% CI 4.9, 27.8, $N = 115$), and tidal volume of 185 ml (95% CI 19.7, 349.8, $N = 85$).

Clinical messages

- Preoperative inspiratory muscle training significantly improved pulmonary function, length of postoperative hospital stay and reduced risk of pulmonary complications.
- Postoperative inspiratory muscle training showed significant improvement in pulmonary function patients undergoing cardiac surgery.
- Pre- and postoperative inspiratory muscle training showed to be a beneficial intervention in the treatment of patients undergoing cardiac surgery.

REVIEW

Inspiratory muscle training is effective to reduce postoperative pulmonary complications and length of hospital stay: a systematic review and meta-analysis

Filipa Kendall^{a,b,c}, José Oliveira^c, Bárbara Peleteiro^{d,e}, Paulo Pinho^a and Pedro Teixeira Bastos^a

ABSTRACT

Purpose: This study systematically review and meta-analyse the effectiveness of inspiratory muscle training (IMT) to reduce postoperative pulmonary complications (PPC) and length of hospital stay (LOS), both in the preoperative and/or postoperative periods of cardiac, pulmonary, and abdominal surgical patients. Sensitive analysis was performed to examine which patients benefit more from IMT according to methodological features (quality of studies and sample size), patient's characteristics (pulmonary risk stratification, age, and body mass index), type of surgery, period of training, and training protocols (training doses and level of supervision).

Methods: The literature search was made in the electronic databases PubMed[®], EBSCO, Web of Science[®], PEDro and Scopus[®]. Only randomized controlled trials were included. Data extraction, quality assessment and meta-analysis were performed.

Results: We included 17 randomized controlled trials in the systematic review, of which, 12 were included for the PPC meta-analysis and 11 for the LOS meta-analysis. IMT significantly reduced the risk of PPC (Risk Ratio (RR) = 0.50, 95%CI: 0.39, 0.64, $I^2 = 0.0\%$), and a decrease in LOS (Mean Difference = -1.41, 95%CI: -2.07, -0.75, $I^2 = 0.0\%$).

Conclusion: IMT is effective to reduce PPC and LOS in patients undergoing surgery.