

REHABILITATION ISSUES IN NONOPERATIVELY AND OPERATIVELY MANAGED CLAVICLE FRACTURES

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DISCLOSURES

I have no actual or potential conflict of interest in relation to this program/presentation.

REHAB COMPLICATIONS

SURGICAL

Infection

Scar Sensitivity

Blood Clots

Wound Healing

Hardware Irritation

NON-SURGICAL

Scapular
Dyskinesis*

Shoulder
Complex
Mobility &
Atrophy

Bone Healing

REHAB PHASE I: 0-6 DAYS

SURGICAL

Protect
Healing



NON-SURGICAL

Control Pain
& Swelling

Protect
Clavicle



REHAB PHASE I: 0-6 DAYS



Change
dressing and
keep wound
clean



AROM elbow,
wrist, hand,
pendulums
Ice PRN



Gentle
isometrics
guided by
PT/OT

REHAB PHASE II: 1-6 WEEKS



Scapular
mobilizations



Scapular PNF
and
isometrics



Shoulder ROM
& Rotator Cuff
Strengthening

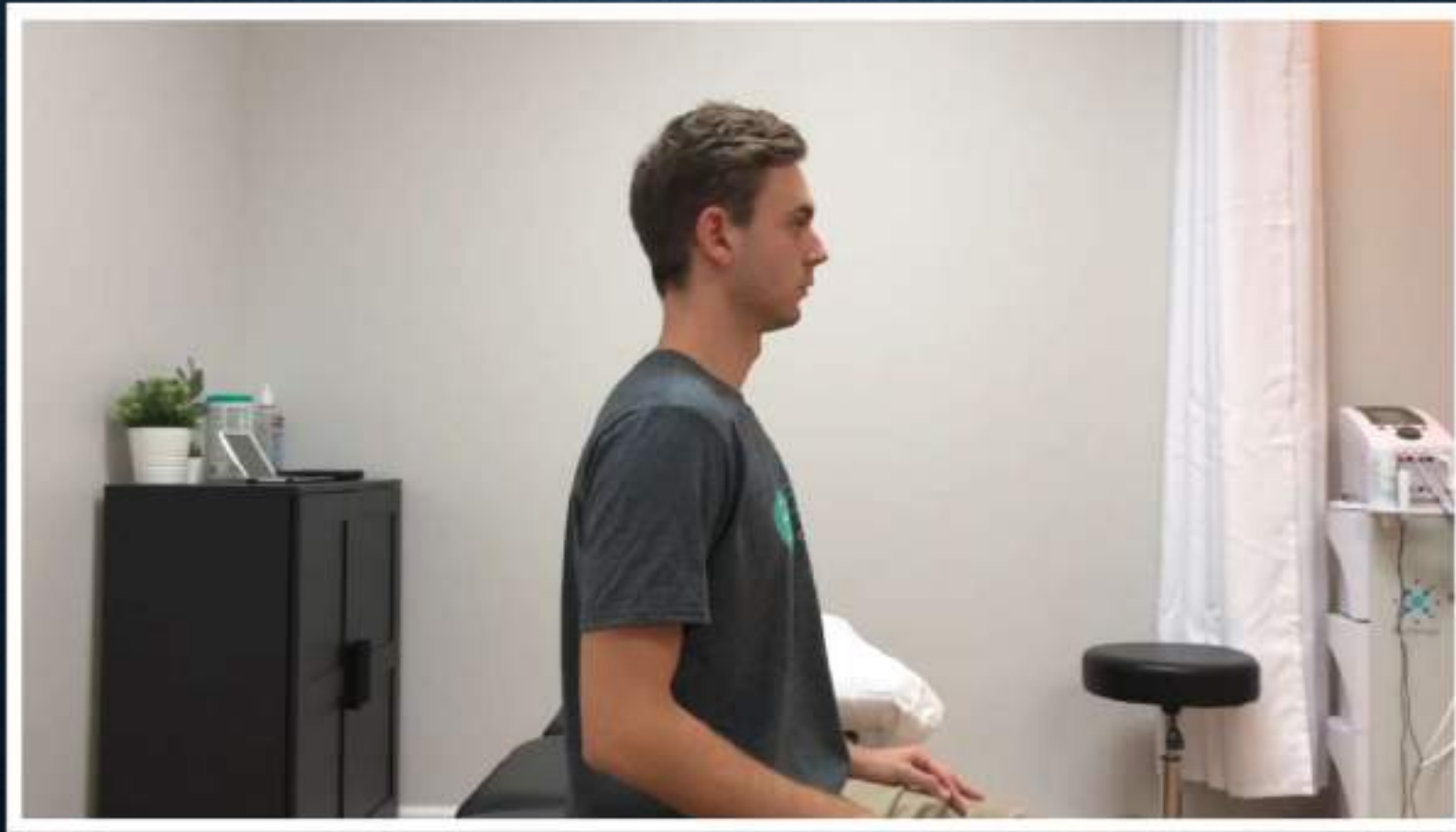
REHAB PHASE II: SCAPULAR MOBILIZATIONS



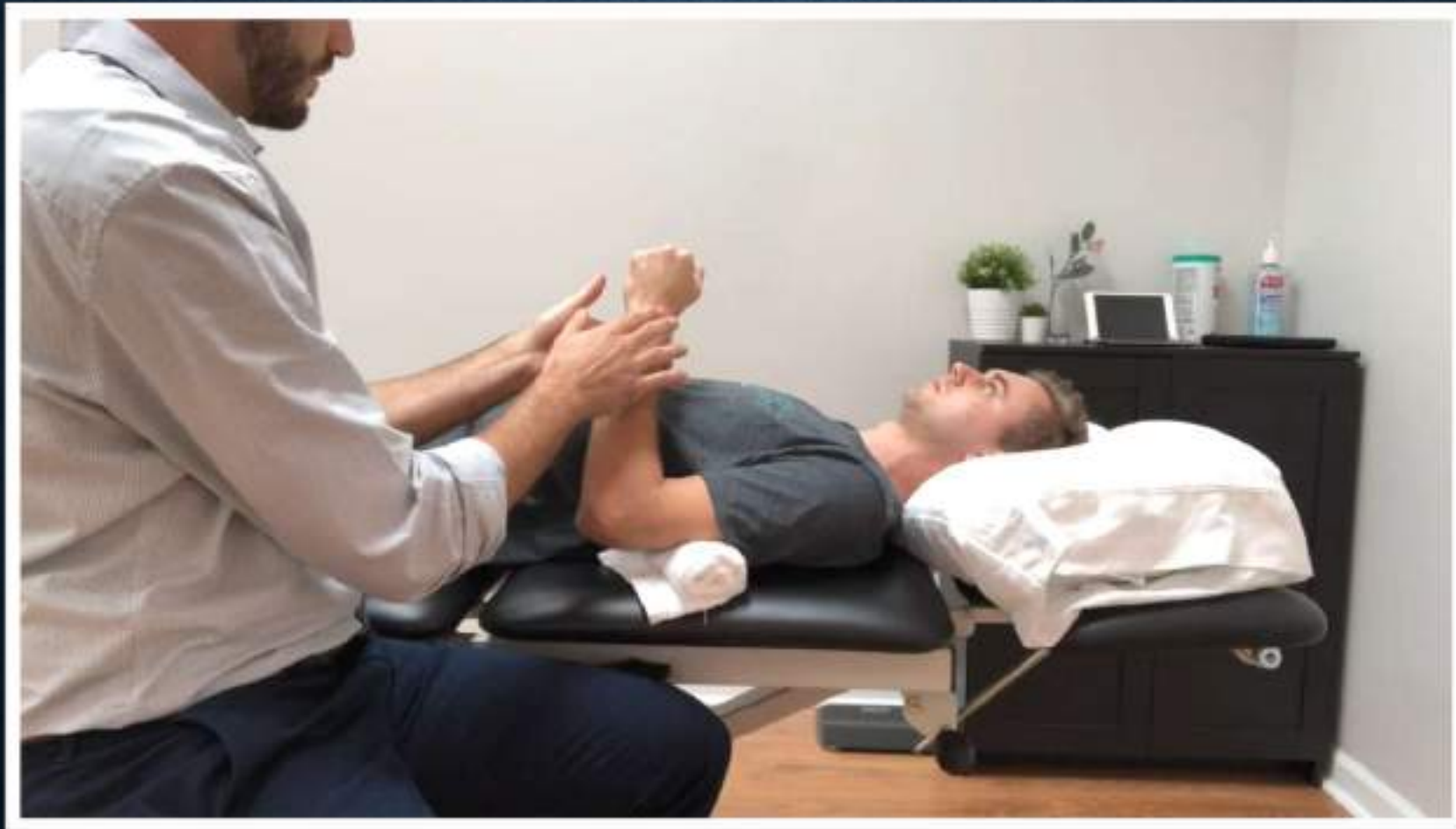
REHAB PHASE II: SCAPULAR PNF & ISOMETRICS



REHAB PHASE II: SHOULDER P/AROM



REHAB PHASE II: ROTATOR CUFF STRENGTHENING



REHAB PHASE II: PRECAUTIONS

Weeks 1-3

- 90° shoulder elevation
- No lifting over 1-2 lbs (coffee cup)
- Avoid excessive IR/ER (no >45° ABD)
- Avoid reaching behind back
- Avoid reaching across body
- Sling use majority of day

Weeks 3-6

- 120° shoulder elevation
- No lifting over 1-2 lbs (coffee cup)
- Avoid excessive IR/ER (up to 90 ABD)
- IR to back pocket
- Pain-free across body motion
- Sling use discharged by physician (typically 4-6 weeks)

REHAB PHASE III: 7-12 WEEKS



Shoulder
complex PNF
and MRE



Shoulder
complex
strengthening



Full shoulder
ROM

REHAB PHASE III: SHOULDER COMPLEX PNF & MRE



REHAB PHASE III: SHOULDER COMPLEX STRENGTHENING



REHAB PHASE III: FULL SHOULDER ROM

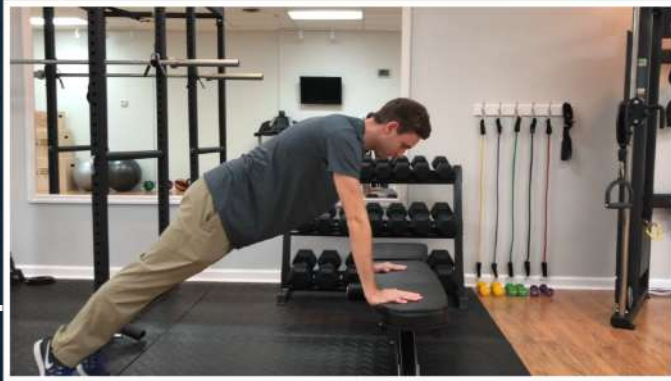


REHAB PHASE III: PRECAUTIONS

- Progress based on healing (especially non-operative)
- Avoid forceful pushing/pulling
- Avoid overhead lifting
- Full ROM by week 12
- No forceful reaching across body
- Slowly progress IR behind back

REHAB PHASE IV: 13-18 WEEKS

CKC
resistance
program



Scapular
strengthening



Dynamic
shoulder
strengthening



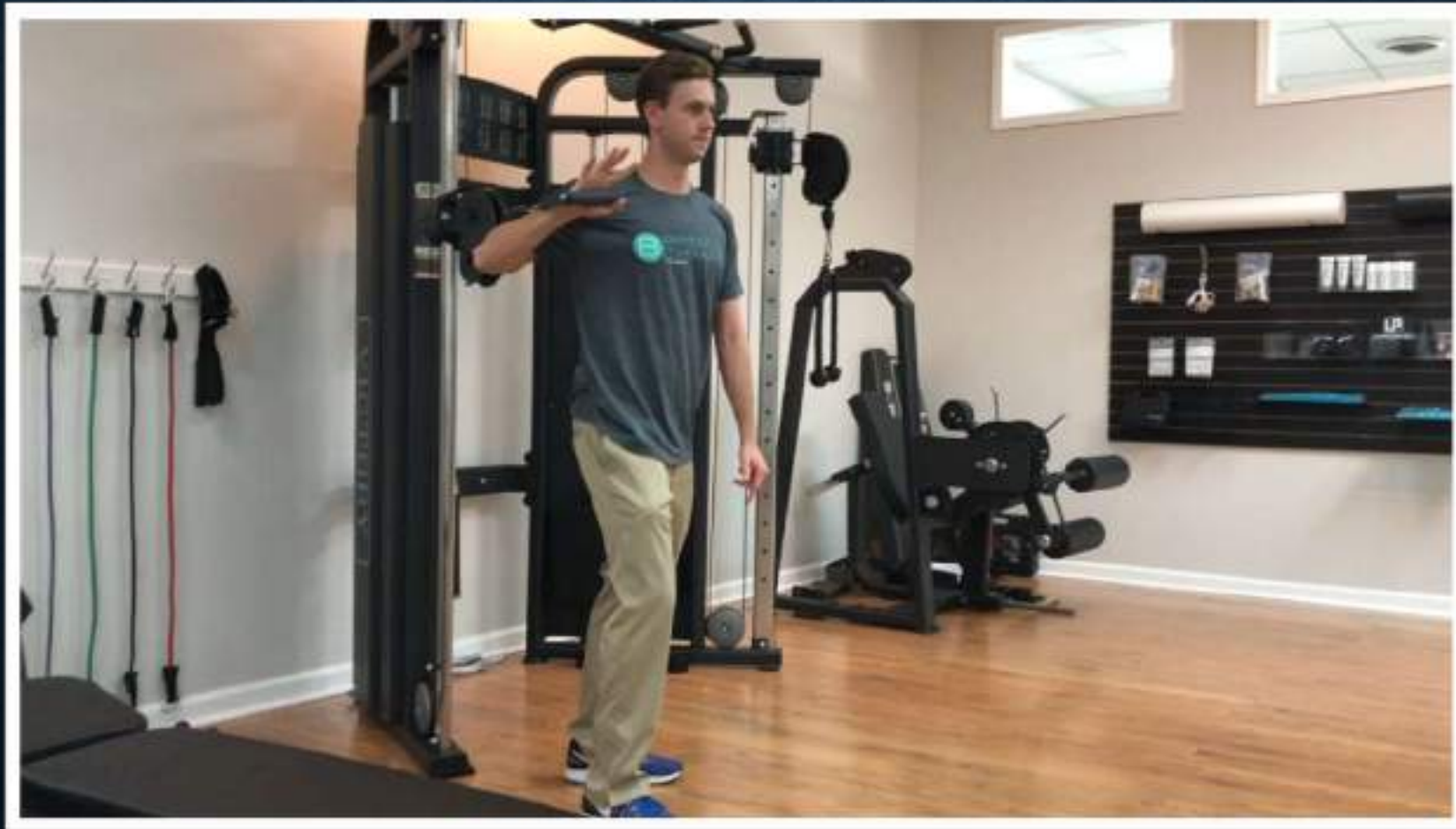
Return to
sport



REHAB PHASE IV: CKC RESISTANCE PROGRAM



REHAB PHASE IV: SCAPULAR STRENGTHENING



REHAB PHASE IV: DYNAMIC SHOULDER STRENGTHENING



REHAB PHASE IV: RETURN TO ATHLETICS AND SPORT



OUTCOMES

- Liu et al. 2013 – *Operative versus non-operative treatment for clavicle fracture: a meta-analysis*
 - 5 studies with 633 fractures
 - DASH scores were higher in the operative groups
 - *Lack of information on standard deviation
 - Nonunion & malunion were higher in non-operative groups
 - *Statistically significant
 - No difference in delayed union nor neurological complications between groups

OUTCOMES

- Qin et al. 2019 – *Open reduction and plate fixation compared with non-surgical treatment for displaced midshaft clavicle fracture*
 - 9 RCT's with 568 ORPF & 568 non-surgical
 - Nonunion was significantly lower in ORPF group
 - Malunion was significantly lower in ORPF group
 - DASH score (1 year): no significant difference
 - Rate of complication was significantly lower in non-surgical group

OUTCOMES

- Lenza et al. 2019 – *Surgical versus conservative interventions for treating fractures of the middle third of the clavicle (review)*
 - 14 studies with 1469 participants
 - No clinical difference in disability (DASH) at > 9 month follow up
 - Limited evidence for pain but no difference at 6 week and 3 month follow up
 - Mechanical failure occurred in 3.4% surgical group
 - Non-union in conservative group ranged from 3.6% to 15.4%

OUTCOMES

- Smeeing et al. 2016 – *Surgical versus nonsurgical treatment for midshaft clavicle fractures in patients aged 16 years or older*
 - 20 studies (8 RCTs and 12 observational) with 1760 participants
 - Nonunion was significantly less in surgical groups
 - Surgical treatment resulted in revision surgery 8.2%-9.2% after initial surgery
 - Short-term DASH showed no difference
 - Long-term DASH was significantly better in surgical groups

LONG-TERM OUTCOMES

- Ven Denise et al. 2015 – *Plate fixation versus conservative treatment of displaced midshaft clavicle fractures: Functional outcome and patients' satisfaction during a mean follow-up of 5 years*
 - 97 patients
 - Mean DASH and Constant Scores showed no significant difference in long-term follow up at 5 years between groups
 - Patient satisfaction was higher in the operative group than the conservative group at 5 year follow up

OTHER FACTORS

- Smoking: slower bone healing in especially in non-surgical groups
- Unemployment: lower overall outcomes
- Poor social support, low education level, poverty, and substance abuse have a significant effect on self-reported outcomes
- Age: older patients are more likely to have UE dysfunction



B PHYSICAL
THERAPY
Oviedo

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