LOTHIAN PHYSIOTHERAPY BEST PRACTICE STATEMENT

Total Knee Replacement (TKR)

Introduction:
Surgery: Total Knee Replacement / Knee Arthroplasty
Indications for surgery: Pain relief from severe osteoarthritis / rheumatoid arthritis / inflammatory arthritis. This can cause reduced mobility and function.
Expected inpatient length of stay: 2-3 days

Scope of practice:
This statement is aimed to guide outpatient physiotherapists treating patients following TKR, particularly those with complications or at risk of complications and to help manage patient expectations.

The statement and recommendations should always be used in conjunction with the clinical reasoning skills of the physiotherapist and patients should always be treated on a case by case basis.

Evidence base:
Combination of a literature review of current evidence based literature (see reference list attached) and best practice statements from medical and peer consultation.

Expectations from surgery:
- Pain relief
- Potential ROM achievable - 120° flexion (primary TKR), 105° flexion (revision TKR). Often patients will not achieve as much flexion as this.
- Improved function / mobility (due to pain relief from surgery)

Physiotherapy recommendations:
- Postoperative knee ROM exercises (passive, active-assisted and active) **C**
- Strength and exercise programme to improve function, strength and ROM. Target quads and general lower limb strengthening **A2, C**
- Cryotherapy (for early postoperative pain management). **A2**
- Motor Function Training. Functional exercises include sit-stand, backward walking, stairs, squats, lunges, balance exercises. **A2, A3, C**
- Increase Physical Activity (walking, swimming cycling). **A3**
- Independent gait – use of sticks may be discontinued when comfortable, when patient has good quads control and good gait pattern **C**
- **Look out for any signs of post-operative complications (DVT, PE, delayed wound healing, infection)**

Criteria for onward referral:

- Early referral to outpatient physiotherapy is needed if patient has poor range of movement (15° off full extension or flexion less than 70° when at level for discharge) or poor quad strength
- Refer back to Arthroplasty Service (NHS) or Consultant (Spire) at 8/52 post-op if patient has 60° or less range of flexion, for consideration of MUA.
- MUA likely to be most effective if done before 12/52 post op

Levels of Evidence:

Evidence from large randomised controlled trials (RCTs) or systematic review (including meta-analyses)†	A1
Evidence from at least one high quality cohort	A2
Evidence from at least on moderate size RCT or systematic review	A3
Evidence from at least one RCT	B
Expert opinions	C
Laboratory Evidence*	D

† *Arbitrarily, the following cut-off points have been used: large study size ≥ 50 patients per intervention group; moderate study size ≥ 30 patients per intervention group.*

* *Arbitrarily, added by Lothian Physiotherapy Musculoskeletal Network Group*

Modified from: MacAuley D and Best TM (2007) Evidence-based Sports Medicine. 2nd Edition. BMJ Books. Blackwell Publishing. Oxford, UK.

Reference List:

BADE, M.J. et al. 2017. Early high-intensity versus low-intensity rehabilitation after total knee arthroplasty: a randomised controlled trial. *Arthritis Care Research. 69(1),* pp. 1360-1368.

CHRISTIANSEN, C.L. et al. 2018. Effects of weight-bearing biofeedback training on functional movement patterns following total knee arthroplasty: a randomised controlled trial. *Journal of Orthopaedic Sports Physical Therapy. 45(1),* pp. 647-655.

HUSBY, V.S. et al. 2018. Randomised controlled trial of maximal strength training vs standard rehabilitation following total knee arthroplasty. *European Journal of Physical Rehabilitation Medicine. 54(1).* pp 371-379.

JETTE, D.U. et al. 2020. Physical therapist management of total knee arthroplasty. *Physical therapy*, *100*(9), pp.1603-1631.

KARAMAN, A. et al. 2017. Do pilates-based exercises following total knee arthroplasty improve postural control and quality of life? *Physiotherapy Theory Practice. 33(1).* pp 289-295.

LI, L. et al. 2019. Tai chi chuan exercises improve functional outcomes and quality of life in patients with primary total knee arthroplasty due to knee osteoarthritis. *Complementary Therapy Clinical Practice. 35(1).* pp. 121-125.

LIAO, C.D. 2018. et al. Functional outcomes of outpatient balance training following total knee replacement in patients with knee osteoarthritis: a randomised controlled trial. *Clinical Rehabilitation. 29(1),* pp. 855-867.

MOLLA, R.Y. et al. 2017. The effect of early progressive resistive exercise therapy on balance control of patients with total knee arthroplasty: a randomised controlled trial. *Topics in Geriatric Rehabilitation. 33(1).* pp. 286-294.

NICE. 2020. *Joint replacement (primary): hip, knee, shoulder guidelines*. Accessed on 03/04/2022. https://www.nice.org.uk/guidance/ng157/chapter/Recommendations

PAXTON, R.J., et al. 2015. Physical activity after total knee arthroplasty: a critical review." *World Journal of Orthopaedics. 6(8).* pp. 614.

RUFFILLI, A. et al. 2017. Temperature-controlled continuous cold flow device after total knee arthroplasty: a randomised controlled trial study. *Journal of Knee Surgeries, 30(1),* pp. 675-681.

RUI, W. et al. 2017. Effects of ethyl chloride spray on early recovery after total knee arthroplasty: a prospective study. *Journal of Orthopaedic Science, 20(1),* pp. 89-93.