

Attachment 2: Physical Examination

Performance-Based Measures of Function

Test	Score
Timed Up and Go	_____ seconds
Timed Chair Rise	_____ seconds
20 cm Step Test	_____ # steps
40 meter Self-paced Walk Test	_____ seconds

CLINICAL EXAMINATION FORM

Height (cm): _____

Weight (kg): _____

Body Mass Index: _____

Most Symptomatic Knee: _____

Physical Impairment Measures

IMPAIRMENT	SCORE	
	Right	Left
Hip Flexion Contracture (Thomas Test Position)	_____ no contracture _____ degrees of flex contracture	_____ no contracture _____ degrees of flex contracture
Combined Hip Flexion, Adduction, Internal Rotation	_____ posterior hip pain _____ no posterior hip pain	_____ posterior hip pain _____ no posterior hip pain
Combined Hip Flexion, Abduction, External Rotation	_____ anterior hip pain _____ no anterior hip pain	_____ anterior hip pain _____ no anterior hip pain
Hip Internal Rotation	_____ degrees	_____ degrees
Hip External Rotation	_____ degrees	_____ degrees
Knee Flexion ROM	_____ degrees	_____ degrees
Knee Extension ROM	_____ degrees	_____ degrees
Ankle Dorsiflexion ROM with Knee Flexed	_____ degrees	_____ degrees
Ankle Dorsiflexion ROM with Knee Extended	_____ degrees	_____ degrees
Quadriceps Flexibility	_____ degrees	_____ degrees

Hamstring Flexibility	_____ degrees	_____ degrees
Unilateral Calf Raise Test	_____ reps	_____ reps
Frontal Plane Pelvic Tilt Test	_____ reps	_____ reps
Proximal Tibiofibular Joint Test	_____ pain produced _____ no pain produced	_____ pain produced _____ no pain produced

Attachment 3: Clinical Outcome Measures

DEMOGRAPHIC AND HISTORY

Date of birth: __ / __ / __
mm dd yyyy

Gender: Male ☐ Female ☐

1. Racial origin: (check all that apply)

- ☐ White
- ☐ African-American
- ☐ Asian
- ☐ Native American
- ☐ Pacific Islander
- ☐ Other

2. Ethnicity (check one)

- ☐ Hispanic
- ☐ Non-Hispanic

3. Marital status: (check one)

- ☐ Married
- ☐ Living with significant other
- ☐ Divorced/separated
- ☐ Widowed
- ☐ Single (never married)

4. Level of education: (check one)

- ☐ Less than high school
- ☐ Graduated from high school
- ☐ Some college
- ☐ Graduated from college
- ☐ Some post-graduate course work
- ☐ Completed post-graduate degree

5. The following are a list of health problems. Do you currently have, or have you previously had the problem?

- | | | |
|-----------------------------------|------------------------------|-----------------------------|
| a. Heart | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| b. High Blood Pressure | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| c. Stroke | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| d. Congestive Heart Failure | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| e. Lung Disease | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| f. Diabetes | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| g. Stomach Ulcer | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| h. Kidney Disease | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| i. Liver Disease | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| j. Anemia or other blood disorder | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| k. Cancer | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| l. Depression | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| m. Back pain | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

- n. Memory problems ☐ Yes ☐ No
o. Previous hip fracture ☐ Yes ☐ No
p. Other medical problems ☐ Yes ☐ No
- If yes, please describe:

6. How long have you had symptoms (pain) of arthritis in your knee?

- ☐ Less than 1 year
☐ 1 – 2 years
☐ 3 – 5 years
☐ 5 – 10 years
☐ More than 10 years

7. When did you first see a physician about arthritis in your knee?

- ☐ Less than 1 year
☐ 1 – 2 years
☐ 3 – 5 years
☐ 5 – 10 years
☐ More than 10 years

9. Have you had any prior knee injuries and/or surgery?

- ☐ No
☐ Yes (If Yes, describe type of surgery and approximate date.)

Type: _____ Date: _____

Type: _____ Date: _____

10. Before coming to physical therapy, have you tried any other treatment for your knee pain within the last year?

- ☐ No
☐ Yes (If Yes, please describe the treatment.)

10a. _____

(Max. 60 characters)

10b. Did the treatment help?

- ☐ No
☐ Yes

American College of Rheumatology Clinical Criteria for Knee OA

RIGHT KNEE		
Clinical Variable	Yes	No
Knee Pain		
Age > 50 years		
Morning Stiffness \leq 30 min.		
Crepitus on Active Knee Motion		
Tenderness on bony margins of the joint		
Bony enlargement of the joint		
Lack of palpable warmth to synovium		
Meets ACR Criteria		

LEFT KNEE		
Clinical Variable	Yes	No
Knee Pain		
Age > 50 years		
Morning Stiffness \leq 30 min.		
Crepitus on Active Knee Motion		
Tenderness on bony margins of the joint		
Bony enlargement of the joint		
Lack of palpable warmth to synovium		
Meets ACR Criteria		

Bilateral Involvement?: _____ Yes _____ No

Blood Pressure _____

Numeric Knee Pain Rating Scale

NOTE: THIS SHOULD BE DONE FOR BOTH KNEES

Think about the **pain** of your knee.

Please rate your pain on a scale of 0 to 10, where 0 is no pain at all and 10 is the worst imaginable pain:

D1: Your current pain at the moment (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Worst imaginable pain

D2: Worst (highest) pain in the last 24 hours (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Worst imaginable pain

D3: Best (lowest) pain in the last 24 hours (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Worst imaginable pain

WOMAC 0-10 Numeric Rating Scale

Think about the **pain** you felt in your knee due to your arthritis during the last 48 hours.
If any question does not apply to you please imagine the situation.

QUESTION: How much **pain** do you have (or would you have)...

E1: Walking on a flat surface (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Extreme
Pain

E2: Going up or down stairs (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Extreme
Pain

E3: At night while in bed, i.e. pain that disturbs your sleep (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Extreme
Pain

E4: Sitting or lying (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Extreme
Pain

E5: Standing upright (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Extreme
Pain

Think about the **stiffness (not pain)** you felt in your knee due to your arthritis during the last 48 hours.

Stiffness is a sensation of **restriction** or **slowness** in the ease with which you move your joint.

E6: How **severe** is your stiffness **after first awakening** in the morning? (*Mark ONE*)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No stiffness

Extreme
Stiffness

E7: How **severe** is your stiffness after sitting, lying or resting **later in the day**? (*Mark ONE*)

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No stiffness

Extreme
Stiffness

Think about the **difficulty** you had in doing the following daily physical activities due to arthritis in your knee during the last 48 hours. By this we mean **your ability to move around and to look after yourself**.

QUESTION: What degree of **difficulty** do you have (or would you have)...

E8: Descending stairs (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E9: Ascending stairs (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E10: Rising from sitting (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E11: Standing (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E12: Bending to the floor (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

Think about the **difficulty** you had in doing the following daily physical activities due to arthritis in your knee during the last 48 hours. By this we mean **your ability to move around and to look after yourself**.

QUESTION: What degree of **difficulty** do you have (or would you have)...

E13: Walking on a flat surface (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E14: Getting in or out of a car, or getting on or off a bus (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E15: Going shopping (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E16: Putting on your socks or stockings (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E17: Rising from bed (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

Think about the **difficulty** you had in doing the following daily physical activities due to arthritis in your knee during the last 48 hours. By this we mean **your ability to move around and to look after yourself**.

QUESTION: What degree of **difficulty** do you have (or would you have)...

E18: Taking off your socks or stockings (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E19: Lying in bed (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E20: Getting in or out of the bath (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E21: Sitting (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E22: Getting on or off the toilet (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

Think about the **difficulty** you had in doing the following daily physical activities due to arthritis in your knee during the last 48 hours. By this we mean **your ability to move around and to look after yourself**.

QUESTION: What degree of **difficulty** do you have (or would you have)...

E23: Performing heavy domestic duties (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

E24: Performing light domestic duties (*Mark ONE*):

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No difficulty

Extreme
Difficulty

Case ID Number

--	--	--	--	--	--	--	--	--

FI ID Number

--	--	--	--	--	--	--

Today's Date: ____ / ____ / ____

EQ-5D

Conducted by Research Triangle Institute

On Behalf of

The University of Arizona Center for Health Outcomes and Pharmacoeconomic
Research

April 2002

Form # 2

OWN HEALTH QUESTIONS

By placing a checkmark in one box in each group below, please indicate which statements best describe your own health state today.

Mobility

- | | | |
|--------------------------|---------------------------------------|--------------------------|
| <input type="checkbox"/> | I have no problems in walking about | <input type="checkbox"/> |
| <input type="checkbox"/> | I have some problems in walking about | <input type="checkbox"/> |
| <input type="checkbox"/> | I am confined to bed | <input type="checkbox"/> |

Self-Care

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | I have no problems with self-care | <input type="checkbox"/> |
| <input type="checkbox"/> | I have some problems washing or dressing myself | <input type="checkbox"/> |
| <input type="checkbox"/> | I am unable to wash or dress myself | <input type="checkbox"/> |

Usual Activities (e.g., work, study, housework, family, or leisure activities)

- | | | |
|--------------------------|--|--------------------------|
| <input type="checkbox"/> | I have no problems with performing my usual activities | <input type="checkbox"/> |
| <input type="checkbox"/> | I have some problems with performing my usual activities | <input type="checkbox"/> |
| <input type="checkbox"/> | I am unable to perform my usual activities | <input type="checkbox"/> |

Pain/Discomfort

- | | | |
|--------------------------|------------------------------------|--------------------------|
| <input type="checkbox"/> | I have no pain or discomfort | <input type="checkbox"/> |
| <input type="checkbox"/> | I have moderate pain or discomfort | <input type="checkbox"/> |
| <input type="checkbox"/> | I have extreme pain or discomfort | <input type="checkbox"/> |

Anxiety/Depression

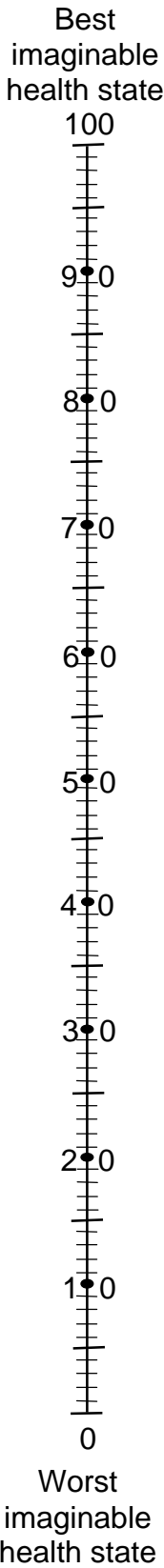
- | | | |
|--------------------------|--------------------------------------|--------------------------|
| <input type="checkbox"/> | I am not anxious or depressed | <input type="checkbox"/> |
| <input type="checkbox"/> | I am moderately anxious or depressed | <input type="checkbox"/> |
| <input type="checkbox"/> | I am extremely anxious or depressed | <input type="checkbox"/> |

Please tell your interviewer when you have finished.

CATEGORY RATING THERMOMETER

For Office Use Only

1.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
2.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
3.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
4.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
5.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
6.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
7.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
8.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
10.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
11.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
12.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
13.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
14.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
15.	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



For Office Use Only

1.

--	--	--

OWN HEALTH SCALE

Best
imaginable
health state

100

90

80

70

60

50

40

30

20

10

0

Worst
imaginable
health state

SHORT FORM - 12

This questionnaire asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. *Thank you for completing this questionnaire!*

For each of the following questions, please place a mark ⊗ in the one circle that best describes your answer.

F1: In general, would you say your health is: (*Mark ONE*)

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
○ ₁	○ ₂	○ ₃	○ ₄	○ ₅

**F2: The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?
(*Mark ONE per line*)**

	Yes, limited a lot	Yes, limited a little	No, not limited at all
	▼	▼	▼
a <u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	○ ₁	○ ₂	○ ₃
b Climbing <u>several</u> flights of stairs.....	○ ₁	○ ₂	○ ₃

F3: During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health? (Mark *ONE* per line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a <u>Accomplished less</u> than you would like.....	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
b Were limited in the <u>kind</u> of work or other activities.....	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

F4: During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)? (Mark *ONE* per line)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a <u>Accomplished less</u> than you would like.....	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
b Did work or other activities <u>less carefully than usual</u>	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

F5: During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? (Mark *ONE*)

Not at all	A little bit	Moderately	Quite a bit	Extremely
<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

F6: These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks... (*Mark ONE per line*)

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Have you felt calm and peaceful?	<input type="radio"/> 1.....	<input type="radio"/> 2.....	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
b Did you have a lot of energy?	<input type="radio"/> 1.....	<input type="radio"/> 2.....	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
c Have you felt downhearted and depressed?	<input type="radio"/> 1.....	<input type="radio"/> 2.....	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

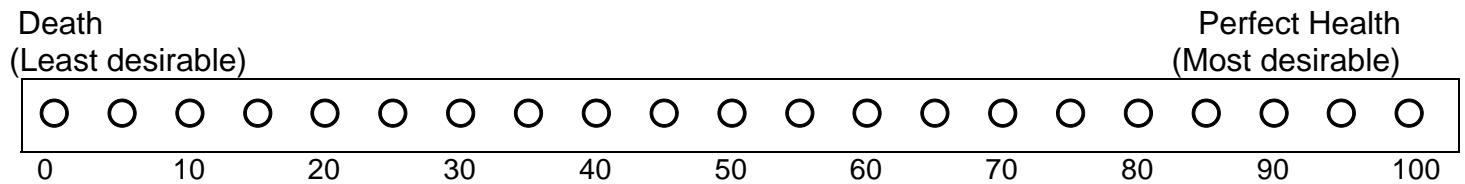
F7: During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)? (*Mark ONE*)

All of the time	Most of the time	Some of the time	A little of the time	None of the time
<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

Thank you for completing these questions!

G1: Now imagine a scale (such as the figure below) representing the desirability of various states of health. Suppose that 0 represents death or the worst possible health state that you can imagine and 100 represents perfect health or health as good as you can possibly imagine.

Using this scale from 0 – 100, please mark the position that represents how desirable you find your current state of health (i.e., how happy you are with your current state of health) (*Mark ONE*)



Global Rating Of Change

Please rate your knee's overall condition from the time you began treatment until now (check only one):

1. A very great deal better
2. A great deal better
3. Quite a bit better
4. Moderately better
5. Somewhat better
6. A little bit better
7. A tiny bit better (almost the same)
8. About the same
9. A tiny bit worse (almost the same)
10. A little bit worse
11. Somewhat worse
12. Moderately worse
13. Quite a bit worse
14. A great deal worse
15. A very great deal worse

Pain Belief Screening Instrument

1. How much pain have you experienced on average the last week?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

No pain

Worst Pain Possible

2. To what extent have you managed activities related to the home and family?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

Not at all

To a high degree.

3. Simply being careful that I do not make any unnecessary movements is the safest thing I can do to prevent my pain from worsening.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

Do not agree at all

Fully agree.

4. My body is telling me I have something dangerously wrong.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

Do not agree at all

Fully agree.

5. I feel that the pain overwhelms me.

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

Do not agree at all

Fully agree.

6. How confident are you about your ability to go to a movie?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

Not at all confident.

Very confident.

7. How confident are you in your ability to go shopping?

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
0	1	2	3	4	5	6	7	8	9	10

Not at all confident.

Very confident.

Beck Anxiety Inventory

Below is a list of common symptoms of anxiety. Please read each item in the list carefully. Indicate **how much** you have been bothered by each symptom **during the past week, including today**, by placing a mark in the corresponding box. Please mark only **one** response per question.

	0	1	2	3
	Not At All	Mildly (It did not bother me much)	Moderately (It was very unpleasant but I could stand it)	Severely (I could barely stand it)
1. Numbness or tingling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Feeling hot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Wobbliness in legs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Unable to relax	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Fear of worst happening	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Dizzy or lightheaded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Heart pounding or racing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Unsteady	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Terrified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Nervous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Feeling of choking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Hands trembling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Shaky	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Fear of losing control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Difficulty breathing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Fear of dying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Indigestion or discomfort in abdomen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Faint	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Face flushed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Sweating (not due to heat)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Center of Epidemiological Studies Depression (CES-D) Scale

Below is a list of the ways you might have felt or behaved. Please check the box to the right of each statement to indicate the statement that best describes **how often you felt or behaved this way DURING THE PAST WEEK**. Please mark only **one** response per question.

	0	1	2	3
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasion- ally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I did not feel like eating; my appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I felt that I could not shake off the blues even with help from my family or friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I felt that I was just as good as other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I felt that everything I did was an effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I felt hopeful about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I thought my life had been a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I felt fearful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I talked less than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I had crying spells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I felt that people disliked me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I could not get going.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Patient Treatment Expectations

Indicate by circling the comment next to the treatment that corresponds to your amount of agreement with the following statement. Substitute each treatment into the blank as you consider your response.

I believe _____ will significantly help to improve **this episode** of my knee pain.

Note: If you have never received a particular treatment, base your answer on how much you think it would help if you were to receive this treatment. Ask your physical therapist about any treatment that is not familiar to you.

Medication	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Rest	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Surgery	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Modalities (i.e. ultrasound, TENS, etc.)	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Massage	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Joint Mobilization (therapist applies back and forth gliding motions of your leg and thigh bones with his/her hands to free up motion)	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Steroid injection to your knee	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Aerobic exercise (i.e. walking, stationary cycling, Stairmaster, etc.)	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Range of motion exercises (i.e. stretching)	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree
Strengthening exercises	completely disagree	somewhat disagree	neutral	somewhat agree	completely agree

Supervised Exercise Compliance

This will be determined as a percentage of the # of exercises administered divided by the # of treatments prescribed for each exercise session. The trial coordinator will average the % compliance per session over the 12 sessions and submit that as the patients score.

Average % exercise compliance over 12 supervised sessions _____

Home Exercise Program Compliance

Note: We will have this reported by each subject on a monthly basis during their first year of involvement. Therefore they will have 12 ratings of the following question:

Mark the statement below that corresponds to how compliant you were in completing your home exercise program this month.

- I completed the home exercise program exactly as instructed.
- I performed the home exercise program approximately 75% of the time.
- I performed the home exercise program approximately 50% of the time.
- I performed the home exercise program approximately 25% of the time.
- I never performed the home exercise program at all.

Attachment 4: Supervised Exercise Intervention

APPENDIX 4: EXERCISE PROTOCOL DESCRIPTION

GENERAL GUIDELINES

Section 1: Core protocol exercises:

Four components: Aerobic/warm-up; Strengthening; Stretching; Neuromuscular control

EACH PARTICIPANT PERFORMS ALL FOUR COMPONENTS OF THE PROGRAM

Aerobic. To be performed for up to 10 minutes at moderate level as warm-up

Strengthening. All strengthening exercises must be performed.

Dose: 3 sets of 10 repetitions with a 3 second hold

Stretching. All stretches must be performed each session, until goals are met.

Dose: 1 minute total with 20-60 second hold times

Goals: The following stretches can be discontinued when the goal is met:

1. Hamstring stretch discontinued after meeting 90/90 test. Patient must achieve 30° or less of knee extension with hip at 90°
2. Runner's stretch discontinued after meeting 10° DF with knee extended and 10° DF with knee bent

Neuromuscular control. Choose the 3 most challenging exercises the patient can achieve safely.

Dose: 2 minutes each exercise, 3 exercises. May repeat any exercise more than once, and count the repeat as a new exercise.

Section 2: Additional impairments-based exercises

Additional techniques: For those patients who test positive for additional impairments at the initial assessment, the following exercises may be prescribed based on the clinical judgment of the clinician. Dose parameters follow the guidelines listed above for strengthening and stretching.

EACH PARTICIPANT PERFORMS ALL FOUR COMPONENTS OF THE PROGRAM

Section 1: CORE PROTOCOL EXERCISES

AEROBIC EXERCISE

- Cycling or Treadmill walking is performed up to 10 minutes with the patient achieving Level 13 of the Borg Perceived Exertion rate within 2 minutes of activity. Exercise is discontinued if patient reports an increase in pain ≥ 2 points on NPRS.
- NOTE: Follow monitoring rules, where applicable, for participants with identified cardiovascular risk.

STRENGTHENING EXERCISES

- DOSE: Each strengthening exercise is done for 3 sets of 10 with a 3 second hold or until fatigue. Exercise is discontinued if patient reports an increase in pain ≥ 2 points on NPRS, however this should be avoided by ensuring appropriate starting intensity/resistance.

Strengthening of knee extensors 1: Open chain progression:

LEVEL 1: Isometric quads set.

The participant is positioned in long sitting with the knee extended. Therapist instructs the participant to isometrically contract the quadriceps muscles bilaterally as vigorously as possible without reproducing pain. The exercise is performed on each limb.



Progression: Progress to level 2 when 3 sets of 10 are performed without difficulty, and the patient is performing activity with ease and good form.

LEVEL 2: Leg Extensions

The participant is initially positioned in sitting in a chair or on treatment table with the exercised leg in approximately 90 degrees of flexion. The therapist instructs the participant to extend the knee to full extension, then slowly lower until the foot returns to rest on the table.

Progression: Progress to level 3 when 3 sets of 10 are performed without difficulty, and the patient is performing activity with ease and good form.



LEVEL 3: Resisted Leg Extensions

Progress from Level 2 by applying theraband resistance to the ankles. The level of theraband is progressed sequentially by color. The progression is from least to most resistance (red, green, blue, gray, black, gold). When the subject can perform 3 sets of 10 reps without difficulty, using good form, then the resistance should be progressed to the next color. When “gold” is achieved, you may need two loops of band to further progress the resistance (either drop to lesser resistance color and use 2 loops or use 2 loops of gold if appropriate).



Terminal Knee Extension in Standing

The participant stands facing toward the exercise bar anchor with a resistive band looped behind a slightly flexed knee and around the anchor. The therapist instructs the participant to contract the gluteal and quadriceps muscles to fully straighten the hip and knee. Begin with a resistance band around 15 RM. The exercise is performed on each limb.

Progression: The level of resistance band is progressed sequentially by color. The progression is from least to most resistance (red, green, blue, gray, black, gold). When the subject can perform 3 sets of 10 reps without difficulty, using good form, then the resistance

should be progressed to the next color. When “gold” is achieved, you may need two loops of band to further progress the resistance.

Standing Strengthening of knee extensors 2: Closed chain progression

LEVEL 1: Weight-reduced partial squats.

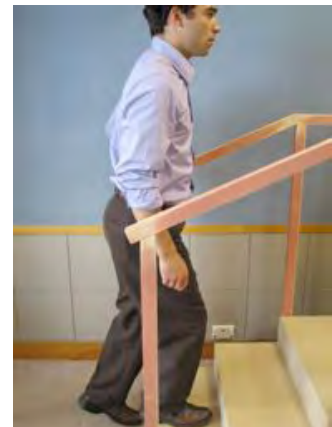
The participant stands facing toward a plinth or table, partially supporting his/her body weight with arm support. The therapist instructs the participant to perform a partial squat, keeping the knees tracking lateral to the big toe, and return to upright. It is important that the patient not advance their knees anteriorly beyond the toes to prevent the development of anterior knee pain. The exercise should be done in a range that does not reproduce anterior knee pain.



Progression: Partial squats without arm support, then partial squats with the patient's back against the wall.

LEVEL 3: Step-ups. Note: These will be added when the subject can perform 3 sets of 10 reps of partial squats with the back against the wall.

The participant stands in front of a step. Start with the 6.5cm step and progress as tolerated. The patient places the foot of the target limb on the step and brings the body over the foot to stand on the step with an extended knee. The participant is to minimize arm support assistance or push-off assistance from the contralateral limb. Slowly lower until the contralateral foot returns to fully weight-bear on the floor, then return the target limb alongside (i.e. the starting position). The exercise is performed on each limb. Be sure to provide directions to keep the knee over the 2nd metatarsal and keep the pelvis as level as possible to promote proper alignment and hip control during this task. NB: Hip control is important for knee OA patients.



Progress to 13cm step. If possible, progress to 20cm step, provided this does not aggravate knee pain.

Note: This can also be done as a lateral step-up to begin with if the subject can't tolerate the forward step-up procedure. Eventually this should be progressed to forward step up.

Strengthening of Hip Extensors:

LEVEL 1: Supine glut sets.

Patient is supine and performs an isometric glut contraction.

Progression: Patient is progressed to Level 2 when 3 sets of 10 of Level 1 exercise is performed without difficulty and patient is performing activity with ease and good form.

LEVEL 2: Supine bridging.

Patient is supine with knees bent 90°. Patient actively performs a glut contraction while lifting the hips and pelvis off the floor to obtain a bridge position, with the hip in a neutral flex/ext position.

Progression: Patient is progressed to Level 3 when 3 sets of 10 of Level 2 exercise is performed without difficulty and patient is performing activity with ease and good form.

LEVEL 3: Supine unilateral bridging.

Patient is supine with knees bent 90°. Patient actively performs a glut contraction while lifting the hips and pelvis off the floor to obtain a bridge position. Unaffected knee is extended from flexed position and held.



Strengthening of Knee Flexors:

LEVEL 1: Prone hamstring curls.

The participant is positioned in prone on the treatment table. The participant flexes the knee from full extension to 90° of flexion, then returns limb to full knee extension



position. Exercise is performed on each limb. Watch for excess lumbar movement.

Progression: Progress to Level 2 when 3 sets of 10 is performed without difficulty, and the patient is performing activity with good form.

LEVEL 2: Theraband is applied to the distal leg. May be done in prone or in standing, whichever is easiest for the patient to set up.

Progression: The level of resistance band is progressed sequentially by color. The progression is from least to most resistance (red, green, blue, gray, black, gold) When the subject can perform 3 sets of 10 reps without difficulty, using good form, then the resistance should be progressed to the next color. When “gold” is achieved, you may need two loops of band to further progress the resistance (either drop to lesser resistance color and use 2 loops or use 2 loops of gold if appropriate).



STRETCHING EXERCISES

- **DOSE:** 1 minute total for each stretch, comprising 20-60 seconds holds

Calf Muscle Group Stretching:

Patient assumes a standing position with involved lower extremity placed behind the non-involved. Patient's arms are placed on wall and involved knee is kept straight with heel flat to the floor until stretch is felt.



Hamstring Muscle Group Stretch:

Hamstring Stretch: The participant will lie supine. The participant will hold the thigh in 90° of hip flexion. The knee will be extended as far as possible.. Hold the limb in the stretched position for 30 seconds. Repeat the exercise 3 times. Repeat the exercise on your opposite leg.

Alternative methods may include using a strap or towel wrapped around the foot and held by the participant to maintain the stretched position or using the long sitting position to provide the hamstring stretch.



Quadriceps Muscle Group Stretch:

The participant is positioned in either standing or prone. Patient places foot onto chair until stretch is felt or lies prone using towel to stretch. In some instances, a sidelying position may be used in which the subject is instructed to keep the hip in neutral flex/ext while maximally flexing the knee.



NEUROMUSCULAR CONTROL EXERCISES

- **DOSE:** Each patient is to perform at least 3 of the following exercises for duration of 2 minutes. Exercises can be repeated if unable to perform 3 different activities. Goal is 6 minutes of neuromuscular exercises and to increase variability of exercises as function improves. Exercise is discontinued if patient reports an increase in pain ≥ 2 points on NPRS.

Standing Weight Shifts

LEVEL 1: Forward and lateral weight shifts eyes open.

Patient assumes a standing position with feet side by side or in tandem stance. Purpose is to increase proprioception in the affected lower extremity by shifting weight onto the involved hip then return to neutral stance. Watch for compensations at the trunk or hip.

Progression: Patient advances to Level 2 when 3 sets of 30 seconds are performed with ease and good form.

LEVEL 2: Forward and later shifts eyes shut. Same as Level 1 but with with eyes closed.

Progression: Patient advances to Level 3 when 3 sets of 30 seconds are performed with ease and good form.

LEVEL 3: Tandem stance weight shift eyes open.

Patient assumes heel to toe position with involved hip forward. Weight is to be shifted onto the involved hip keeping the eyes open.

Progress to eyes closed if needed.



BALANCE

LEVEL 1: Double leg foam balance.

Participant stands with both feet on a soft foam surface.

Progression: Patient advances to Level 2 when 3 sets of 30 seconds are performed with ease and good form.



LEVEL 2: Double leg wobble board.

Participant stands with both feet on a wobble board surface.

Progression: Patient advances to Level 3 when 3 sets of 30 seconds are performed with ease and good form.



LEVEL 3: Single leg stance on the floor.

Participant stands on involved leg maintaining single leg balance. Perform 3 sets of 30 seconds. Watch for compensation at the hip or trunk.

May be progressed to single leg stance on foam or wobble board.

May be advanced with addition of ball toss or perturbations.



Side-stepping

LEVEL 1: Side-stepping.

Participant steps sideways keeping the toes pointing forward, moving right or left. Repeat by changing direction to return to starting position. Activities are performed along the exercise bar/safety rail along the mirrored wall.

Progression: Patient advances to Level 2 when side stepping on level surface with ease.



LEVEL 2: Side-stepping with obstacles.

Same as above, but add cones for patient to step over when performing activity.

Progression: Patient advances to Level 3 when side stepping on level surface with obstacles can be performed with ease.



LEVEL 3: Carioca (or Braiding).

Patient performs front cross-over stepping with side step, b) back cross-over stepping with side step, and c) alternate front and back cross-over steps (walking carioca). Repeat by changing direction to return to starting position.



Shuttle Walking

Place 4 plastic cone markers at distances of 2m. The patient walks forward to first marker, then walks backward to return to start. Patient then walks to 4m marker forward, returns to 4m marker walking backward. The participant then walks to 6m marker, returns to 8m marker walking backward, then finish by walking to the end (10m).



Stairs

Patient is asked to ascend/descend 3 stairs with alternating step pattern to increase strength and functional activity. May use upper extremity support if needed.

Progress with increased step height.

Section 2: ADDITIONAL IMPAIRMENTS-BASED EXERCISES

For those patients with additional impairments identified at the initial assessment, the following exercises may be prescribed based on the clinical judgment of the clinician. Dose parameters follow the guidelines listed above for strengthening and stretching.

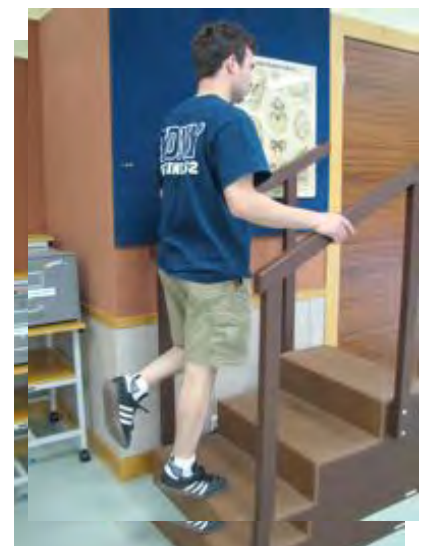
Strengthening of ankle plantar-flexors

INDICATION: If inability to perform 10 unilateral calf raises (with full height and calcaneal inversion) or noticeable muscle atrophy compared to opposite side.

LEVEL 1: Bilateral calf raise and lowering.

Patient is positioned in standing with both feet on the step. Patient rises up on toes as high as possible, holding for 3 seconds, then returning to start position.

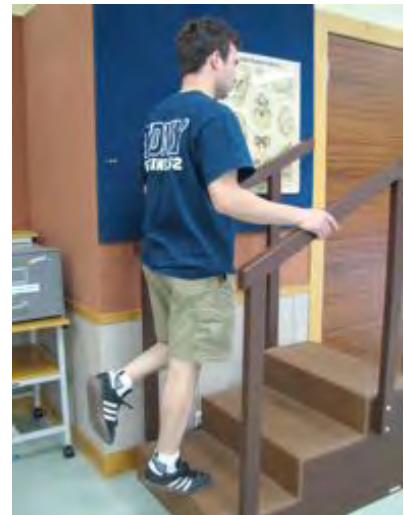
Progression: Patient is progressed to Level 2 when 3 sets of 10 of Level 1 exercise is performed without difficulty and patient is performing activity with good form.



LEVEL 2: Bilateral calf raise, unilateral lowering.

Patient is instructed to go up on toes bilaterally and lower only with the involved side with or without use of upper extremity support.

Progression: Patient is progressed to Level 3 when 3 sets of 10 of Level 2 exercise is performed without difficulty and patient is performing activity with good form.



LEVEL 3: Unilateral calf raise, unilateral lowering.

Patient is instructed to raise up on involved side, lower with involved side with or without use of upper extremity support.

Strengthening of hip abductors

INDICATION: If unable to perform 10 lateral pelvic tilts while weight-bearing on the test leg (reverse action hip abduction)

LEVEL 1: Supine hip abduction.

Patient lies supine and actively abducts the involved hip through the available ROM.

Progression: Patient is progressed to Level 2 when 3 sets of 10 of Level 1 exercise is performed without difficulty and patient is performing activity with good form.



LEVEL 2: Standing hip abduction.

Patient is standing and actively abducts the involved hip through the available ROM.

Progression: Patient is progressed to Level 3 when 3 sets of 10 of Level 2 exercise is performed without difficulty and patient is performing activity with good form.



LEVEL 3: Side-lying hip abduction.

Patient is positioned in side-lying and actively abducts the involved hip through the available ROM.

Progress to level 4 when the exercise is performed 3 sets of 10 without difficulty and patient is performing activity with good form.



LEVEL 4: Reverse action hip abduction in standing.

Subjects stands on the exercise limb in unilateral support. The pelvis is laterally tilted toward the non-wt bearing limb and then tilted back up to neutral. Neutral position is held for 3 seconds. Repeat the exercise, up to 3 sets of 10 repetitions. A chair or table can be used for balance initially, but the exercise should be progressed to performing without the need for balance support.



Strengthening of Hip External Rotators

INDICATION: Same as for Hip Abductors.

LEVEL 1: Clamshells.

Patient is positioned in side-lying with knees bent 90°. Patient actively externally rotates the upper leg through the available ROM while maintaining the pelvis in neutral alignment and keeping the feet together.

Progression: Patient is progressed to Level 2 when 3 sets of 10 of Level 1 exercise is no longer challenging and patient is performing activity with ease and good form.



LEVEL 2: Clamshells with resistance.

As above with theraband around the knees to increase resistance.

Progression: Patient is increased to Level 3 when 3 sets of 10 of Level 2 exercise is no longer challenging and patient is performing activity with ease and good form.

LEVEL 3: Clamshells with increased resistance.

As above with increased level of resistance using theraband.



Attachment 5: Manual Therapy Intervention

APPENDIX 5: MANUAL THERAPY PROTOCOL DESCRIPTION

GENERAL GUIDELINES

The goal of manual therapy: tissue altering techniques.

The intention is to treat each impairment with manual techniques which will take the joint to end of range at least once in a treatment session. During the manual techniques the joint should be taken to end of range by employing the highest dose of mobilization appropriate. The therapist should achieve at least one set of grade III, IV, or V each session. (Caution with EOR techniques for knee flexion as a degenerative meniscus is easily aggravated in this position.)

Joint position.

The therapist may select a joint position for treatment based on their assessment of the irritability of the patient's condition. Joint position can be altered in response to patient reporting or test: re-test findings.

Patient position.

The therapist may modify the patient's starting position for treatment based on the patient's condition. Patient position can be altered in response to patient inability to achieve the standard position or reporting discomfort.

Dose.

Accessory movements can be performed in sets of 30 oscillations. At least 3 sets should be performed. The therapist should employ the highest dose of mobilization appropriate, with at least one set of grade III, IV, or V each session. A maximum of 6 sets can be performed if the patient is tolerating the technique and responding favorably.

STM duration will be of 2-3 minutes duration. Therapist to record actual time. Additional time for massage could be performed if considered high priority by the therapist and there is sufficient time (i.e. during secondary treatment time).

Manual stretches to quadriceps, hamstrings, and gastrocnemius should be performed. Dosage will be 60 seconds total (1x60s, 2x30s, 3x20s).

Physiological movements can be performed 10-30 times. The number of sets will range from 3 to 6 according to therapist choice and patient response.

Order. The therapist can select the order of treatment techniques. They may choose to alternate between techniques (e.g. accessory movements and physiological movements).

Test-retest. The therapist can perform test-retest procedures throughout the treatment session as required.

Addition/Dropping of techniques.

Additional techniques (if indicated) should be added as time allows. The therapist should be clear of the response to new techniques.

Hamstring and gastrocnemius stretches and STM may be dropped at follow up sessions if goals have been reached.

Hamstrings: 90/90 test < 30° from full knee extension

Gastrocnemius: < 10° d/flx (knee ext), < 10° d/flx (knee flx)

Patient safety.

If the physiotherapist considers application of a mandatory technique threatens patient safety they may opt not to perform that technique. Wherever possible, choose an alternative patient position or a variation from the “acceptable variation” category.

Each time this occurs the physical therapist must document this in the patient’s treatment record at the end of the session. The PI should be informed on that day, as soon as is practically possible.

The PI will review the case with the therapist, discussing the patient’s history and physical condition with respect to the protocol deviation. Following consultation the course of future action with respect to the protocol deviation for that patient will be agreed by the therapist and PI. In the event of failure to agree, the PI’s decision will prevail. The PI may seek consultation in order to reach a decision, and/or may deliver the protocol technique in question for that patient.

Manip, Inc.

Each site will provide the treating therapists with the CD Manip, Inc. to serve as a reference for the joint mobilization techniques over the course of the study.

Section 1: Primary Techniques

Knee flexion and extension—All knee flexion and extension techniques are mandatory at the initial session.

For knee flexion, AP’s, patellar glides, STM, manual stretches and physiological movements should all be included.

For knee extension, PA’s, external rot, STM, manual stretches and physiological movements should all be included.

Acceptable variations include:

Patient position (supine/sitting/weight bearing, with or without seat belt)

Med/lat glides of tib/fem jt, with/without seatbelt

Varus/valgus stresses, internal/external rots of tibia, for accessory and physiological movements

Combining physiologic and accessory movements

Hip Long Axis Distraction and Caudal/Lateral Glide: These techniques are also mandatory as most people with knee OA have limitations in hip motion that can affect function.

Section 2: Additional Regional Techniques

Can be performed in remaining time after the specific knee and hip techniques. A joint may only be included for treatment if indicated by the regional screening. The therapist can prioritize the secondary techniques on the basis of patient presentation, response and tolerance. The therapist should select a technique which addresses the particular impairment for that joint.


Acceptable variations to the techniques as outlined are:



Addition of caudad/cephalad glide of superior tib/fib joint (by inversion or eversion of ankle)



Addition of weight-bearing and seat belt for talocrural mobilization


Combinations of physiological and accessory movements



Section 1: Knee and Hip Mandatory Manual Therapy Techniques



Knee Flx Accessories MANDATORY	A-P accessory	<p>The patient lies in supine. The therapist selects the knee joint position on the basis of pain and irritability.</p> <p>The least provocative joint position would be in the pain free range.</p> <p>If patient response allows the knee could be flexed to the onset of pain or resistance.</p> <p>If patient response allows the joint can be placed at EOR flx into the restrictive barrier.</p> <p>The therapist places the 1st web space on the proximal tibia. An oscillatory mobilisation (Grade 3 or 4) is performed in an anterior to posterior direction on the proximal tibia.</p> <p>Tibial rotation can be added to most effectively reach the restrictive barrier.</p>	
---------------------------------------	----------------------	--	--



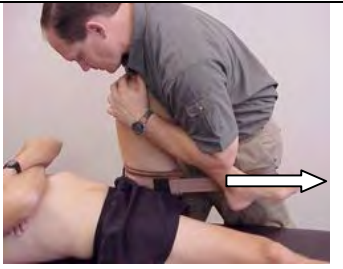
	Patellar mobilizations	<p>The patient lies supine with the knee in extension. The joint position can be progressed into increasing flexion or weight bearing if the symptoms are easing or minor.</p> <p>Oscillatory movements(glides) are produced via the therapists thumbs or a cupped hand. The glides can be combined with rotation and/ or compression to meet the restriction.</p> <p>Compression should be introduced with caution.</p> <p>Medial/Lateral/Caudad/Cephalad are selected on the basis of restriction. If no restriction is detectable caudad/cephalad glides should be used.</p>	
Physiological MANDATORY	Pure Knee Flx + valgus +int tibial rotn +seat belt	<p>The therapist stabilizes the patient's thigh and knee against their body while grasping the patient's ankle. The therapist gently brings the patient's heel towards the buttock to the restrictive barrier. Oscillations can be produced in a pure flx direction. (Grade 3 or 4). A seat belt can be added to produce a lateral glide of tibia through range if this decreases pain. A medial glide of the tibia can be produced by placing the seat belt around the femur and manually gliding the tibia medially.</p> <p>Valgus stress can be added (heel lateral to buttock)(Grade 3 or 4).</p> <p>Int rotn can be added simultaneously. Oscillatory mobilizations will be performed through a 5-6 inch arc of motion.</p>	

	Pure Knee Flx + Varus + ext rotn tibia + seat belt	<p>The therapist stabilizes the patient's thigh and knee against their body while grasping the patient's ankle. The therapist gently brings the patient's heel towards the buttock to the restrictive barrier. Oscillations can be produced in a pure flx direction. (Grade 3 or 4). A seat belt can be added to produce a lateral glide of tibia through range if this decreases pain. A medial glide of the tibia can be produced by placing the seat belt around the femur and manually gliding the tibia medially.</p> <p>Varus stress can be added (heel to midline)(Grade 3 or 4).</p> <p>Ext rotn can be added simultaneously. Oscillatory mobilizations will be performed through a 5-6 inch arc of motion.</p>	
Manual Stretch Knee Flexion MANDATORY	Quad stretch, progress to rectus femoris stretch	<p>The patient is positioned supine. The therapist stabilizes the patient's thigh and knee against their body while grasping the patient's ankle. The therapist gently brings the patient's heel towards the buttock to the restrictive barrier. The stretch is held for 1x60 secs (or 2-30s, 3-20s).</p> <p>If no stretch is felt the patient is positioned prone. The therapist stabilizes the pelvis and produces a passive flexion stretch by bringing the heel towards the buttock. The stretch is held for 1x60 secs (or 2-30s, 3-20s).</p> <p>An alternative position is with the patient lying supine with the involved LE dangling over the edge of the plinth. The therapist sits alongside the involved LE and flexes the knee just before the point of patient reported stretch. The stretch is held for 1x60 secs (or 2-30s, 3-20s).</p>	




STM MANDATORY	Quads/Peripatella r/ITB	<p>The patient is positioned supine with leg over the side of the plinth. The patient's quadriceps is placed on a stretch. The therapist performs an effleurage stroke along the length of the quads. The therapist proceeds from superficial to moderate depth of the effleurage depending on patient tolerance. This is repeated at 1" intervals. 2-3 min</p> <p>The strokes can include the peripatellar area or particular tightness is present, circular massage can be concentrated in this area.</p> <p>Note: If the patient cannot tolerate this positioning the effleurage is performed with the quadriceps on stretch in a position that is tolerable to the patient.</p> <p>To address the ITB position the patient in side lying in an Ober's position modified for comfort.</p>	
Knee Extension Accessories MANDATORY	PA accessories (may include External Rotn Tibia)	<p>The patient is positioned prone. The therapist selects the joint position on the basis of pain and irritability.</p> <p>The least provocative position is with the knee flexed in a pain free range.</p> <p>As patient response allows the knee is positioned in more ext at the onset of pain or resistance.</p> <p>As patient response allows the joint is positioned at EOR ext at the restrictive barrier.</p> <p>The therapist uses their thumb pads or the heel of their hand to impart oscillatory movements in the PA direction.</p> <p>The other hand can be used to move the lower end of the tibia parallel with the proximal end</p> <p>Or: the distal tibia can be lifted slightly to combine PA with knee</p>	




		<p>flx</p> <p>Or: the distal tibia can be lowered to combine PA with knee ext</p> <p>Or: External Rotation may be added.</p> <p>The patient is positioned supine. The knee is positioned in flexion and progressed to extension as patient response allows.</p> <p>The therapist grasps around the proximal and of the tibia. The thenar eminence of the lateral hand produces an AP movement while simultaneously the fingers of the medial hand produce a PA movement, resulting in a lateral rotation of the tibia on the femur.</p>	
Physiological MANDATORY	Pure Knee Extension + valgus/varus +seat belt +AP glide	<p>The therapist places the heel of one hand over the proximal tibia while the opposite hand supports the lower leg. An oscillatory movement is performed to the restriction of extension.</p> <p>Valgus or varus stress can be added if it produces a pain response or adds to the restriction.</p> <p>A seat belt can be used to produce medial or lateral glide of the tibia as previously described.</p> <p>An AP glide can be added to the oscillatory movement if it reproduces pain or stretch to the posterior aspect of the knee joint.</p>	 



Manual Stretch MANDATORY – Initial Session DROPPED if goal reached– follow up sessions	Hamstrings (drop if 90/90 test <30° from full knee ext)	<p>The patient is positioned supine with knee extended. The therapist grasps the involved LE and flexes the hip while maintaining knee extension to the point of stretch.</p> <p>The stretch is held for 1x60 secs (or 2-30s, 3-20s).</p>	
	Gastroc (drop if d/flx<10° with knee ext d/flx<10° with knee flx)	<p>The patient is positioned supine with the knee as close to full extension as possible. The therapist grasps the middle of the tibia with one hand to maintain EOR knee ext. With the other hand the therapist cradles the heel and uses their forearm to produce dorsiflexion of the ankle. Stretch should be felt in the posterior aspect of the calf.</p> <p>The stretch is held for 1x60 secs (or 2-30s, 3-20s).</p>	
STM MANDATORY – Initial Session DROPPED if goal reached – follow up sessions	Hamstrings (drop if 90/90 test <30° from full knee ext)	<p>The patient is positioned prone with leg over plinth placing the hamstring on stretch. The therapist performs an effleurage stroke along the length of the hamstrings. This is repeated at 1" intervals. 2-3 min</p> <p>Note: If the patient cannot tolerate this positioning the effleurage is performed with the hamstring on stretch in a position that is tolerable to the patient. e.g. as pictured for hamstring stretch.</p>	
	Adductors	STM for the adductors is included either in STM for hamstrings or quads.	


	Gastroc/ soleus STM (drop if d/flx<10° with knee ext d/flx<10° with knee flx)	<p>The patient is positioned prone with ankle over the edge of the plinth. The therapist places the ankle in dorsiflexion through contact with his thigh. The therapist performs an effleurage stroke along the length of the gastrocs (making sure to cross the knee joint). The amount of dorsiflexion and depth of STM depends on patient tolerance. This is repeated at 1" intervals. 2-3 min</p> <p>Note: If the patient cannot tolerate this positioning the effleurage is performed with the gastroc on stretch in a position that is tolerable to the patient.</p>	
Hip Distraction Mandatory	Long axis Distraction / thrust	<p>The patient is positioned supine. The therapist grasps involved leg, above malleoli. The patient's hip is placed in 15-30° flexion, 15-30° ABD, slight ER. The therapist performs an oscillatory passive accessory mobilization force inferiorly feeling for the restrictive barrier and imparts a thrust in an inferior direction. Progression of the distraction position into more abduction to gain further ROM. Repeated 5 x's</p>	
Hip Distraction Mandatory	Seatbelt Glide or Distraction Techniques: Caudal/Lateral Glide Progression	<p>The therapist uses a mobilization belt placed firmly in the patient's hip "crease". The therapist flexes the patient's hip to the restrictive barrier. The therapist uses their body to apply a caudally/laterally directed force to the proximal thigh and performs an oscillatory passive accessory mobilization force. The amount of hip flexion, rotation, & add/abduction can be varied to find the position of optimal mobilization.</p>	

Section 2: Additional Regional Techniques—5 minutes maximum per impairment

Posterior hip pain/stiffness on flexion, adduction, internal rotn	Antero-Posterior Progression (Posterior glide)	<p>The therapist places the patient's lower extremity with the hip in a position of flexion, adduction, and internal rotation. The therapist uses his body to impart an oscillatory, passive mobilizing force to the postero-lateral hip capsule through the long axis of the femur. The technique is progressed by adding more flexion, adduction, & / or internal rotation.</p>	
Anterior hip pain/stiffness on flexion, abduction, and external rotn	Postero-Anterior In hip flex, abd, er (Anterior glide in low crawl position)	<p>Bring the prone lying patient's hip into varying degrees of flexion, abduction and external rotation.</p> <ul style="list-style-type: none"> • Contact the proximal hip and use your body to impart an oscillatory, passive mobilizing force in a posterior to anterior direction. • Vary the vector of your mobilizing force, dependent on stiffness and the patient's symptoms. • If extremely stiff, start with a pillow under the patient's left trunk to decrease the amount of hip abduction required. Progress to lying flat on the table when able. • Reassess symptoms and impairments after mobilization 	
Decreased internal rotation (< 30 or asymmetric with non-involved limb), extension	Internal Rotation in Prone	<p>The therapist flexes the patient's knee to 90 degrees and ensures that the hip is in neutral or slight adduction. The hip is internally rotated until the contralateral ilium raises approximately 1-2 inches from the table. The therapist stabilizes the lower leg and imparts an oscillatory, passive mobilizing force through the contralateral pelvis.</p>	

		<p>Note: If the patient experiences knee discomfort, grasp the distal thigh and place your forearm along the medial aspect of the patient's tibia</p>	
STM	STM to lateral and posterior hip	<p>The patient is positioned side-lying in the recovery position. The therapist performs an effleurage stroke with the posterior/lateral hip musculature on stretch. This repeated at 1" intervals. 2-3 min</p> <p>Note: If the patient cannot tolerate this positioning the effleurage is performed with the posterior/lateral hip musculature on stretch in a position that is tolerable to the patient.</p>	
Stretches Hip ER <30°, or asymmetric with non-involved limb	Manual gluteus/internal rotator stretch	<p>The patient is positioned supine. The therapist flexes the patient's knee to 90, flexes and externally rotates the hip to the point of stretch.</p> <p>Alternate position is patient prone, with the pelvis stabilized.</p> <p>2 reps x 60 sec</p>	
Hip IR <30°, or asymmetric with non-involved limb	Hip external rotator stretch	<p>The patient is positioned supine. The therapist flexes the patient's knee to 90 degrees and ensures that the hip is in neutral or slight adduction. The hip is internally rotated until a stretch is felt at the anterior hip.</p> <p>Alternate position is patient prone. (see description of internal rotn in ext)</p> <p>Hold stretch for 2x60 secs</p>	

<p>Ankle Joint</p> <p>Loss of ankle dorsiflexion</p> <p>d/flx<10° with knee ext d/flx<10° with knee flx)</p>	<p>Rearfoot Distraction Manipulation</p>	<p>The therapists grasps the dorsum of the patient's foot with interlaced fingers and provide firm pressure with both thumbs in the middle of the planar surface of the forefoot engage the restrictive barrier by dorsiflexing and everting the ankle & applying long axis distraction. The therapist pronates, everts, dorsiflexes the foot to fine-tune the barrier. The therapist then applies a high velocity, low amplitude thrust in a caudal direction. If the therapist feels that the distraction is occurring at the talocrural joint, attempt again with more pronation/eversion and "scooping" motion at the rearfoot/subtalar joint before the distraction manipulation</p>	
<p>Loss of ankle dorsiflexion</p> <p>d/flx<10° with knee ext d/flx<10° with knee flx)</p>	<p>AP Talo-Crural Accessory</p>	<p>The therapist uses their left hand to firmly stabilize the lower leg at the malleoli. The therapist then grasps the anterior, medial, and lateral talus with your right hand and applies an anterior to posterior oscillatory mobilization force to the talus. (Grade 3 or 4).</p> <p>The amount of dorsiflexion can be adjusted to meet restriction allowed by patient response.</p> <p>The treatment can be progressed into weight bearing in a lunge position on a chair.</p> <p>This could be reinforced by an anterior glide of the tibia produced by a seat belt.</p>	
<p>Loss of ankle dorsiflexion</p> <p>d/flx<10° with</p>	<p>Physiological Dorsiflexion of ankle</p>	<p>As per gastroc stretch but oscillatory movement to point of resistance.</p>	

knee ext d/flx<10° with knee flx)			
Prox Tib Fib joint (lateral knee pain, including superior Tib/fib joint	Proximal Tibio-Fibular Joint Posterior to Anterior Manipulation	<p>The therapist places their 2nd MCP in the popliteal fossa, then pulls the soft tissue laterally until your metacarpo-phalangeal joint (MCP) is firmly stabilized behind the fibular head. The therapist uses their right hand to grasp the foot and ankle as demonstrated and externally rotate the leg and flex the knee to the restrictive barrier (the therapist should feel firm pressure from the fibular head over the palmar aspect of your MCP). Once at the restrictive barrier, the therapist applies a high velocity, low amplitude thrust through the tibia (direct the patient's heel towards his ipsilateral buttock).</p>	
	AP PA accessories	<p>The patient is positioned in side-lying. They may require padding between the knees for comfort. The therapist is positioned at the side of the bed level with the knee joint. The therapist places the thenar eminence of the treating hand over the anterior or posterior aspect of the fibula head and then imparts a horizontal force to produce the joint glide.</p>	
	STM to ITB popliteal fossa	<p>The patient may be positioned in side-lying or prone. The knee is extended as fully as possible.</p>	

Appendix 6: Home Exercise Program Booklet

Supervised Exercise Compliance

This will be determined as a percentage of the # of exercises administered divided by the # of treatments prescribed for each exercise session. The trial coordinator will average the % compliance per session over the 12 sessions and submit that as the patients score.

Average % exercise compliance over 12 supervised sessions _____

Home Exercise Program Compliance

Note: We will have this reported by each subject on a monthly basis during their first year of involvement. Therefore they will have 12 ratings of the following question:

Mark the statement below that corresponds to how compliant you were in completing your home exercise program this month.

- I completed the home exercise program exactly as instructed.
- I performed the home exercise program approximately 75% of the time.
- I performed the home exercise program approximately 50% of the time.
- I performed the home exercise program approximately 25% of the time.
- I never performed the home exercise program at all.

APPENDIX 6: HOME EXERCISE PROGRAM

Strengthening. All strengthening exercises must be performed.

Dose: 3 sets of 10 repetitions with a 3 second hold

Stretching. All stretches must be performed each session, until goals are met.

Dose: 1 minute total with 20-60 second hold times

Goals: The following stretches can be discontinued when the goal is met:

1. Hamstring stretch discontinued after meeting 90/90 test. Patient must achieve 30° or less of knee extension with hip at 90°
2. Runner's stretch discontinued after meeting 10° DF with knee extended and 10° DF with knee bent

Isometric quads set.

Sitting with your legs extended contract the quadriceps (thigh) muscles on both sides as vigorously as possible without reproducing pain. The exercise is performed on each limb.

3 sets of 10 repetitions with a 3 second hold



Leg Extensions

Sitting in a chair extend your knee until it is straight, then slowly lower until your foot.

3 sets of 10 repetitions with a 3 second hold



Weight-reduced partial squats.

Facing a table, perform a partial squat, keeping your knees tracking over your big toe, and return to upright. The exercise should be done in a range that does not reproduce your knee pain.

3 sets of 10 repetitions with a 3 second hold

**Supine glut sets.**

Lying on your back, squeeze your gluteal "bottom" muscles together.

3 sets of 10 repetitions with a 3 second hold

**Supine bridging.**

Lying on your back, lifting your hips and pelvis off the floor to obtain a bridge position, with the hip in a neutral flex/ext position. Slowly return to the start position.

3 sets of 10 repetitions with a 3 second hold



Prone hamstring curls.

Lying on your stomach bend your knee toward your hip until your lower leg is upright and your foot is pointing toward the ceiling. Then slowly return your leg back to the start position.

3 sets of 10 repetitions with a 3 second hold

**Calf Muscle Group Stretching:**

Standing against a wall, place your involved leg behind the non-involved leg. Keep your back leg straight and heel on the floor until a stretch is felt in the back of your leg.

3 sets holding 20 seconds



Hamstring Stretch:

Lying on your back, grasp the back of your thigh of the leg to be stretched. Straighten your leg until a stretch is felt behind your knee.

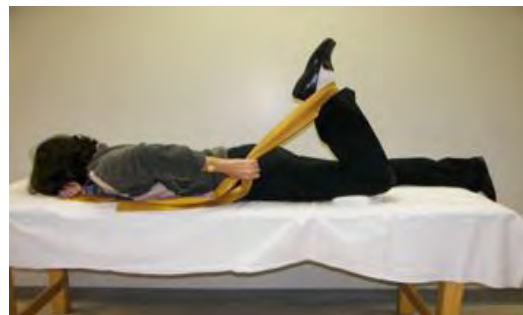
Alternative methods may include using a strap or towel wrapped around your foot and held in your hands to maintain the stretched position

3 sets holding 20 seconds

**Quadriceps Muscle Group Stretch:**

This stretch is to be performed on your stomach or standing. If standing, you will place your foot onto a chair until a stretch is felt in the front of your thigh. If lying on your stomach, use a towel or sheet and pull your ankle toward your hip until a stretch is felt.

3 sets holding 20 seconds



Bilateral calf raise and lowering.

Standing with both feet on the step, rise up on your toes as high as possible, hold for 3 seconds, then returning to start position.

3 sets of 10 repetitions with a 3 second hold



Standing hip abduction.

Standing at a table or counter, lift your involved leg out to the side.

3 sets of 10 repetitions with a 3 second hold



Clamshells.

Lying on your side with your knees bent 90° lift your top leg without allowing your hips to roll backwards.

3 sets of 10 repetitions with a 3 second hold



Appendix 7:

Cost Effectiveness

Outcome Measures

Health Care Costs Questionnaire

For this form please mark the circles and squares – do not circle or cross out options.

CC1. Are the healthcare costs of your hip or knee osteoarthritis being covered insurance, Medicare, or Medicaid? (*Mark ONE*)

☐ Yes

☐ No

CC2. Do you have any of the following? (*Mark ANY that apply*)

☐ Medical insurance

☐ Medicare

☐ Medicaid

CC3. What is your source of income? (*Mark ANY that apply*)

☐ Employment

☐ Self-employed

☐ Social Security / pension

☐ Savings

☐ Other – Please specify: _ _ _ _ _

Impact on Work

CC4. Are you currently employed? (*Mark ONE*)

☐ Yes

☐ No

CC5. If you are no longer employed, is this because of your arthritis? (*Mark ONE*)

- ☐ Yes
- ☐ No

CC6. If you are employed, is this: (*Mark ONE*)

- ☐ Full time
- ☐ Part time

CC7. Approximately how many hours do you work per week? (*Mark ONE*)

- ☐ 0 – 10 hours
- ☐ 11 – 25 hours
- ☐ 26 – 40 hours
- ☐ More than 40 hours

CC8. Approximately, what is the hourly pay rate for this work? (*Round to the nearest dollar*)

\$ _ _ _ per hour

If you don't know the hourly rate, what is your salary per year? (*Approximately*)

\$ _ _ _ _ _ per year

CC9. How has your work been affected by your arthritis in the past month? (*Mark ANY that apply*)

- ☐ I took time off work in the last month (*not including holidays*) because of my arthritis

↳ How many days did you take off? _ _

- ☐ I worked fewer hours (*not including holidays*) because of my arthritis

↳ How many hours less did you work? _ _

☐ I restricted my work because of my arthritis

↳ In what way? Please specify _ _ _ _ _
_ _ _ _ _

Hip or Knee Replacement

CC10. Before starting on the present research project, had you already had... (Mark ANY that apply)

- ☐ A right hip replacement?
- ☐ A left hip replacement?
- ☐ A right knee replacement?
- ☐ A left knee replacement?

CC11. Since starting on the present research project, have you had... (Mark ANY that apply)

- ☐ A right hip replacement?
- ☐ A left hip replacement?
- ☐ A right knee replacement?
- ☐ A left knee replacement?

CC12. Since starting on the present research project, have you waiting for: (Mark ANY that apply)

- ☐ A right hip replacement?
- ☐ A left hip replacement?
- ☐ A right knee replacement?
- ☐ A left knee replacement?

Hip or Knee Procedures

CC13. What procedures have you had because of your arthritis in the past six months? (Mark ANY that apply)

- ☐ A right hip joint injection?
- ☐ A left hip joint injection?
- ☐ A right knee joint injection?
- ☐ A left knee joint injection?
- ☐ Other injections for arthritis?
- ☐ Other procedure for arthritis? If so, please specify:

Medications

CC14. In the lists below (A, B & C), please mark which medications you have taken **because of your arthritis in the past week**. For these medications, please – if possible – specify if they were prescribed by a doctor, what dose they are and how much they cost.

A. Please indicate what medications (including over-the-counter medications and herbal supplements) you have taken in the past week to help with your **hip/knee arthritis**. (Mark *ANY that apply*)

	Medication	Doctor's prescription?	Dose (mg)?	How many per day?	Cost (if any)? in \$s/ number of months e.g. (\$75/3 mos)
<input type="checkbox"/>	I take no prescribed medication for my hip or knee problems				
<input type="checkbox"/>	Aspirin (e.g. Bayer)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Acetaminophen (e.g. Tylenol)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Codeine, Dihydrocodeine, Dextropropoxyphene	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Acetaminophen & Codeine mix (e.g. Tylenol #3)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	NSAID anti-inflammatories (e.g. Ibuprofen, Motrin, Aleve, Diclofenac, Voltaren, Naproxen, Naprosyn, Indomethacin)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	COX-2 inhibitors (e.g. Celecoxib, Celebrex)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Supplements, e.g. Glucosamine, Chondroitin	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Any other painkillers? If so, please specify: _____ _____	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)

B. Please indicate what medications (including over-the-counter medications and herbal supplements) you have taken in the past week to help with your **gastrointestinal disorders (upset stomach)**. (Mark ANY that apply)

	Medication	Doctor's prescription?	Dose (mg)?	How many per day?	Cost (if any)? in \$s/ number of months e.g. (\$75/3 mos)
<input type="checkbox"/>	I take no prescribed medications for gastrointestinal disorders				
<input type="checkbox"/>	Pantoprazole (Protonix)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Omeprazole (Prilosec)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Lansoprazole (Prevacid)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Ranitidine (Zantac)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Antacids (Maalox, Mylanta, Tums, etc.)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Other? If so, please specify: _____ _____	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)

C. Please indicate what medications (including over-the-counter medications and herbal supplements) you have taken in the past week to help with your **mood**. (*Mark ANY that apply*)

	Medication	Doctor's prescription?	Dose (mg)?	How many per day?	Cost (if any)? in \$s/ number of months e.g. (\$75/3 mos)
<input type="checkbox"/>	I take no prescribed medications for help with my mood				
<input type="checkbox"/>	Fluoxetine (Prozac)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Paroxetine (Paxil)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Citalopram (Celexa)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Escitalopram (Lexapro)	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)
<input type="checkbox"/>	Other? If so, please specify: _____ _____	<input type="radio"/> Yes, <input type="radio"/> No	— — — —	— —	\$ — — — / — mo(s)

CC15. Has your use of medications **for your arthritis** changed in the past three months? (Mark ONE)

- ☐ Using much more
- ☐ Using somewhat more
- ☐ Using about the same
- ☐ Using somewhat less
- ☐ Using much less

CC16. Has your use of medications **for your gastrointestinal disorder (upset stomach)** changed in the past three months? (Mark ONE)

- ☐ Using much more
- ☐ Using somewhat more
- ☐ Using about the same
- ☐ Using somewhat less
- ☐ Using much less

CC17. Has your use of medications **for your mood** changed in the past three months? (Mark ONE)

- ☐ Using much more
- ☐ Using somewhat more
- ☐ Using about the same
- ☐ Using somewhat less
- ☐ Using much less

Hospital Usage

CC18. Has an **ambulance** been called for you in the past three months? (Mark ONE)

☐ No

☐ Yes

↳ If so, please specify how many times? __ __

↳ How many times did the ambulance take you to hospital __ __

CC19. Have you been an **in-patient** (admitted to hospital overnight) in a hospital in the past three months? (Mark ONE)

☐ No

☐ Yes

↳ If so, please specify how many times? __ __

↳ Please estimate the total number of days stayed: __ __

CC22. Have you visited a hospital **emergency department** for your treatment in the past three months? (Mark ONE)

☐ No

☐ Yes

↳ If so, please specify how many times? __ __

CC23. Have you had an **x-ray** in a hospital in the past three months? (Mark ONE)

☐ No

☐ Yes

↳ If so, please specify how many times? __ __

Specialist Health Services

CC28. How many visits have you made to an orthopaedic surgeon **because of your arthritis**, in the past three months? __ __

CC29. How many visits have you made to a rheumatologist **because of your arthritis**, in the past three months? __ __

Community Services

CC30. Please indicate if you have used any of the following services because of your arthritis in the past three months and if so, how many times. (*Mark ANY that apply*)

	Mark any that apply:	No. of visits?	Cost to you per visit (if any) in dollars
Home health care	<input type="checkbox"/>	— —	\$ — — —
House cleaner	<input type="checkbox"/>	— —	\$ — — —
Meals on wheels	<input type="checkbox"/>	— —	\$ — — —
Social worker	<input type="checkbox"/>	— —	\$ — — —
Day care / Rehabilitation	<input type="checkbox"/>	— —	\$ — — —
Help from a voluntary organisation	<input type="checkbox"/>	— —	\$ — — —
Other	<input type="checkbox"/>	— —	\$ — — —

Other Medical Services

CC31. Please indicate if you have visited any of the following services because of your arthritis in the past three months and if so, how many times and the cost per visit. (*Mark ANY that apply*)

	Mark any that apply:	No. of visits?	Cost to you per visit (if any) in dollars
Primary care provider	<input type="checkbox"/>	— — —	\$ — — —
Physical therapist	<input type="checkbox"/>	— — —	\$ — — —
Occupational therapist	<input type="checkbox"/>	— — —	\$ — — —
Chiropractor	<input type="checkbox"/>	— — —	\$ — — —
Massage therapist	<input type="checkbox"/>	— — —	\$ — — —
Rest home care / respite care	<input type="checkbox"/>	— — —	\$ — — —
Complimentary / alternative health care workers (e.g. Homeopath, Naturopath, Herbalist, Aromatherapist, Traditional Chinese medicine practitioner, Spiritual leader)	<input type="checkbox"/>	— — —	\$ — — —
Other? If so, please specify: _____ _____	<input type="checkbox"/>	— — —	\$ — — —

Aids and Adaptations

CC32. Have you purchased or been prescribed aids (bath/toilet aids, walking sticks etc.) to help with your arthritis in the last year? (Mark ANY that apply)

- ☐ No, none purchased or prescribed
- ☐ Walking cane
- ☐ Walker (walking frame)
- ☐ Reacher (helping hand)
- ☐ Toilet grab bar
- ☐ Shower chair
- ☐ Other. If so, please specify:

CC33. Have you made adaptations to your home or lifestyle (stopping paid work, more frequent taxi or health care transit usage, installing chair lifts etc.) because of your arthritis in the past year? (Mark ONE)

- ☐ No
- ☐ Yes

↳ If so, please indicate what adaptation(s) you have made and the estimated cost:

[illegible]

Personal and friends or family costs associated with your arthritis

CC34. Do **you** incur personal costs (time off work, car parking fees etc.) associated with hospital or health professional visits? Please do not include travel costs.

- ☐ No
- ☐ Yes

↳ If so, please describe what these costs are (time off work, car parking fees etc.):

↳ Please estimate the cost to you per visit: \$ _____

CC35. Do **you** incur travel costs (mileage, public transport etc.) associated with hospital or health professional visits?

☐ No

☐ Yes

↳ If so, please estimate the cost to you per visit (a return trip): \$ _ _ _

↳ If using a car, please give the approximate return mileage: _ _ _ miles

CC36. Do **your friends or family** incur costs (time off work, car parking fees etc.) associated with accompanying you on hospital or health professional visits? Do not include travel costs.

☐ No

☐ Yes

↳ If so, please describe what these costs are:

_ _ _ _ _
_ _ _ _ _

↳ Please estimate the cost to your friends or family per visit: \$ _ _ _

CC37. Do **your friends or family** incur travel costs associated with accompanying you on hospital or health professional visits?

☐ No

☐ Yes

↳ If so, please estimate the cost to your friends and family per visit (a return trip):
\$ _ _ _

↳ If using a car, please give the approximate return mileage: _ _ _ km

CC38. If there are other costs or consequences of your arthritis, or if you have any comments you would like to share with us regarding any aspect of the research project, please provide them in the space below.

_ _ _ _ _
_ _ _ _ _
_ _ _ _ _
_ _ _ _ _

Thank you for filling in this questionnaire and
participating in our program.

Please return your completed questionnaire in the postage-paid envelope provided.