

Exercise is Medicine[®] In Oncology: A Call to Action

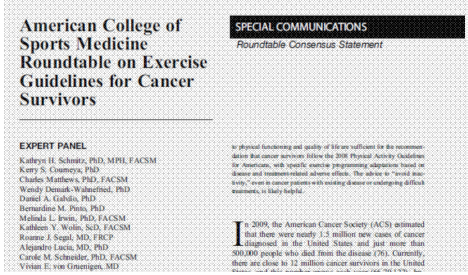
Kathryn H. Schmitz
Professor, Penn State COM
Immediate Past President, ACSM
Chair, Exercise Is Medicine Governing Board
Founder, Moving Through Cancer



 @fitaftercancer
 @fitnessaftercancer
 #ExerciseOncology




1st Roundtable



Schmitz et al. MSSE, 2010



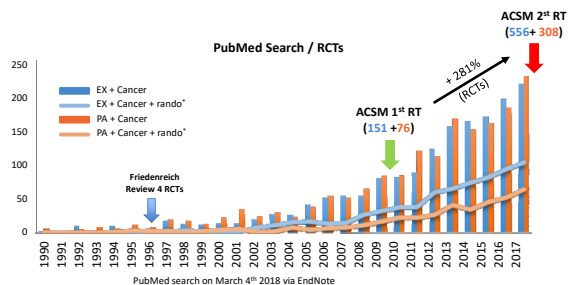





2010 Guidance for Exercise and Cancer

- Focused on safety
- Expert opinion, evidence 'informed'
- Public health oriented
- Reaction to PAGAC
 - Avoid Inactivity
 - 150 min/week aerobic
 - 2x weekly resistance
 - Flexibility on most days





RCTs in the Field of Exercise Oncology since the first ACSM Round Table




International, Multidisciplinary Roundtable on Exercise and Cancer Prevention and Control




**March 12-13, 2018
San Francisco, California**

Co-Chairs:
Kathryn H. Schmitz, Ph.D., M.P.H., FACSM, FTOS
Charles E. Matthews, Ph.D., FACSM

- Partner Organizations
 - ACS
 - SSO
 - CSEP - Canadian
 - NCI
 - CARF
 - MacMillan - UK
 - APTA
 - ACRM
 - ESSA - Australian
 - AAPMR
 - ACLM
 - KDNP - Dutch
 - ASCO
 - DVGS - German



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
ACSM New Guidelines / Publications

Three peer-reviewed journal articles,
Released 16 October 2019

Journal	Topic
MSSE	• Exercise & Cancer Prevention and Recurrence
MSSE	• Exercise During and After Treatment: FITT Prescriptions
CA	• Exercise Is Medicine in Oncology: • A Call to Action



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American College of Sports Medicine Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control



ALPA V. PATEL¹, CHRISTINE M. FRIEDENREICH², STEVEN C. MOORE³, SANDRA C. HAYES⁴, JULIE K. SILVER⁵, KRISTIN L. CAMPBELL⁶, KERRI WINTERS-STONE⁷, LYNN H. GERBER⁸, STEPHANIE M. GEORGE⁹, JANET E. FULTON¹⁰, CRYSTAL DENLINGER¹¹, G. STEPHEN MORRIS¹², TRISHA HUIE¹³, KATHRYN H. SCHMITZ¹⁴, and CHARLES E. MATTHEWS¹⁵

¹Behavioral and Epidemiology Research Program, American Cancer Society, Atlanta, GA; ²Cancer Epidemiology and Prevention Research, Cancer Control Alberta, Alberta Health Services, Calgary, CANADA; ³Division of Cancer Epidemiology and Genetics, National Cancer Institute, Bethesda, MD; ⁴Institute of Health and Biomedical Innovation, Queensland University of Technology, Brisbane, AUSTRALIA; ⁵Department of Physical Medicine and Rehabilitation, Harvard Medical School, Boston, MA; ⁶Department of Physical Therapy, University of British Columbia, Vancouver, CANADA; ⁷Oregon Health & Science University, Portland, OR; ⁸George Mason University, Fairfax, VA; ⁹Office of Disease Prevention, National Institutes of Health, Bethesda, MD; ¹⁰Physical Activity and Health Branch, Division of Nutrition, Physical Activity, and Obesity, Center for Disease Control and Prevention, Atlanta, GA; ¹¹Department of Hematology/Oncology, Fox Chase Cancer Center, Philadelphia, PA; ¹²Department of Physical Therapy, Wingate University, Wingate, NC; ¹³Stanford University, San Francisco, CA; and ¹⁴Department of Public Health Sciences, Penn State College of Medicine, Penn State University, Hershey, PA

ABSTRACT
PATEL, A. V., C. M. FRIEDENREICH, S. C. MOORE, S. C. HAYES, J. K. SILVER, K. L. CAMPBELL, K. WINTERS-STONE, L. H. GERBER, S. M. GEORGE, J. E. FULTON, C. DENLINGER, G. S. MORRIS, T. HUIE, K. H. SCHMITZ, and C. E. MATTHEWS. American College of Sports Medicine Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control. *Med. Sci. Sports Exerc.*, Vol. 51, No. 11, pp. 2191–2402, 2019. **Introduction:** The American College of Sports Medicine convened an International Multidisciplinary Roundtable on Exercise and Cancer in March 2019 to evaluate and translate the evidence linking physical activity and cancer prevention, treatment, and control. This article discusses findings from the Roundtable in relation to the biologic and epidemiologic evidence for the role of physical activity in cancer prevention and survival. **Results:** The evidence supports that there are a number of biologically plausible mechanisms whereby physical activity can influence cancer risk, and that physical activity is beneficial for the prevention of several types of cancer including breast, colon, endometrial, kidney, bladder, esophageal, and stomach. Maintaining time spent in sedentary behavior may also lower risk of endometrial, colon and lung cancers. Conversely, physical activity is associated with higher risk of melanoma, a serious form of skin cancer. Further, physical activity before and after a cancer diagnosis is also likely to be relevant for improved survival for those diagnosed with breast and colon cancer, with data suggesting that postdiagnosis physical activity provides greater mortality benefits than pre-diagnosis physical activity. **Conclusions:** Collectively, there is consistent, compelling evidence that physical activity plays a role in preventing many types of cancer and for improving longevity among cancer survivors, although the evidence related to higher risk of melanoma demonstrates the importance of sun safe practices while being physically active. Together, these findings underscore the importance of physical activity in cancer prevention and control. Fitness and public health professionals and health care providers worldwide are encouraged to spread the message to the general population and cancer survivors to be physically active in their age, abilities, and cancer status will allow. **Key Words:** PHYSICAL ACTIVITY, SEDENTARY TIME, CANCER, PREVENTION, SURVIVAL.




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
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Exercise Prevents Incident & Recurrent Cancer, Improves Survival

Level of Evidence	Physical Activity and Lower Risk of Developing Cancer	Sedentary Time and Higher Risk of Developing Cancer	Pre-Diagnosis Physical Activity and Lower Risk of Cancer-specific Survival	Post-diagnosis Physical Activity and Lower Risk of Cancer-specific Survival
Strong	Colon, Breast, Endometrial, Kidney, Bladder, Esophagus (adenocarcinoma)-Stomach (cardia)			
Moderate	Lung	Endometrial, Colon Lung	Breast, Colon	Breast, Colon, Prostate
Limited	Myeloma & Hematologic, Head & Neck, Pancreas, Prostate, Ovary	Liver		



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Sharing Slides from Dr. Steve Moore, NCI presented at the recent the Roundtable

Original Investigation

Association of Leisure-Time Physical Activity With Risk of 26 Types of Cancer in 1.44 Million Adults

Steven C. Moore, PhD, MPH; I-Min Lee, MBBS, ScD; Elisabete Weiderpass, PhD; Peter T. Campbell, PhD; Joshua N. Sampson, PhD; Cari M. Kitahara, PhD; Sarah K. Keadle, PhD, MPH; Hannah Arem, PhD; Amy Berrington de Gonzalez, DPhil; Patricia Hartge, ScD; Hans-Olov Adami, MD, PhD; Cindy K. Blair, PhD; Kristin B. Borch, PhD; Eric Boyd, BS; David P. Check, BS; Agnès Fournier, PhD; Neal D. Freedman, PhD; Marc Gunter, PhD; Mattias Johansson, PhD; Kay-Tee Khaw, MD, MSc, PhD; Martha S. Linet, MD; Nicola Orsini, PhD; Yikyung Park, ScD; Elio Riboli, MD; Kim Robien, PhD; Catherine Schairer, PhD; Howard Sesso, ScD, MPH; Michael Spriggs, BS; Roy Van Dusen, MS; Alicja Wolk, DMSc; Charles E. Matthews, PhD; Alpa V. Patel, PhD

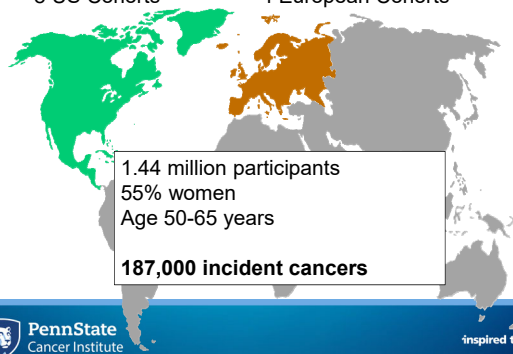


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The Physical Activity Collaboration of the NCI Cohort Consortium

8 US Cohorts 4 European Cohorts



1.44 million participants
55% women
Age 50-65 years

187,000 incident cancers



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Types of physical activity included:

Leisure-time



Moderate intensity
e.g. walking



and/or

Vigorous intensity
e.g. hiking, jogging



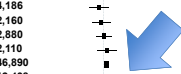
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Main results

(Not adjusted for BMI)

Cancer	Cases
Esophageal adenocarcinoma	899
Gallbladder	382
Liver	1,384
Lung	19,133
Kidney	4,548
Small intestine	503
Gastric cardia	790
Endometrial	5,346
Esophageal squamous	442
Myeloid leukemia	1,692
Myeloma	2,161
Colon	14,160
Head and neck	3,985
Rectum	5,531
Bladder	9,073
Breast	35,178
Non-Hodgkin lymphoma	6,953
Thyroid	1,829
Gastric non-cardia	1,428
Soft tissue	851
Pancreas	4,186
Lymphocytic leukemia	2,160
Ovary	2,890
Brain	2,110
Prostate	46,890
Malignant melanoma	12,438

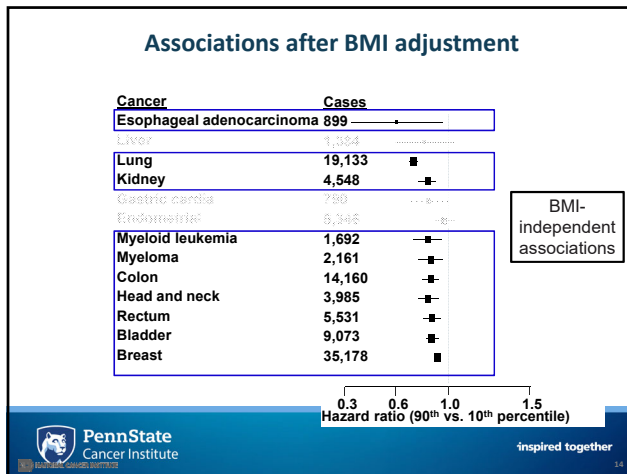


Hazard ratio (90th vs. 10th percentile)



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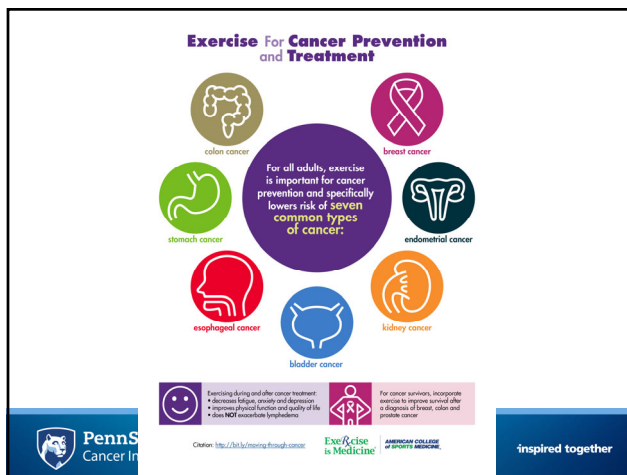


Summary of State of Evidence on Physical Activity and Cancer Survival: Major Sites

Cancer Site	Pre-diagnosis PA		Post-diagnosis PA	
	Cancer-Specific	All Cause Mortality	Cancer-Specific	All Cause Mortality
Breast	↓↓	↓↓	↓↓	↓↓
Colorectal	↓↓	↓↓	↓↓	↓↓
Prostate	Null	↓↓	↓↓	↓↓
Lung	↓	NA	NA	↓
Kidney	↓	NA	NA	NA
Endometrium	Null	Null	NA	NA
Ovarian	Null	Null	NA	NA


Friedenreich CM, et al. *Clin Cancer Res* 2016;22(1):1-11 (updated to January 31, 2018)

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But what about other cancer health related outcomes?

(Symptoms, Treatment Tolerance, Adverse Effects of Treatment)



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SPECIAL COMMUNICATIONS


Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable

KRISTIN L. CAMPBELL¹, KERRI M. WINTERS-STONE², JOACHIM WISSEKEMANN³, ANNE M. MAY⁴, ANNA L. SCHWARTZ⁵, KERRY S. COURNEYA⁶, DAVID S. ZUCKER⁷, CHARLES E. MATTHEWS⁸, JENNIFER A. LKIBEL⁹, LYNN H. GERBER¹⁰, G. STEPHEN MORRIS¹¹, ALPA V. PATEL¹², TRISHA F. HUE¹³, FRANK M. PERNA¹⁴, and KATHRYN H. SCHMITZ¹⁵

¹Department of Physical Therapy, Faculty of Medicine, University of British Columbia, Vancouver, CANADA; ²School of Nursing and Knight Cancer Institute, Oregon Health Sciences University, Portland, OR; ³Division of Medical Oncology, National Cancer Center for Tumor Diseases (NCT) and Heidelberg University Clinic, Heidelberg, GERMANY; ⁴Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht University, Utrecht, THE NETHERLANDS; ⁵School of Nursing, Northern Arizona University, Flagstaff, AZ; ⁶Faculty of Kinesiology, Sport, and Recreation, University of Alberta, Edmonton, CANADA; ⁷Cancer Rehabilitation Medicine Services, Swedish Cancer Institute, Swedish Health Services, Seattle, WA; ⁸Molecular Epidemiology Branch, Division of Cancer Epidemiology and Genetics, National Cancer Institute, Rockville, MD; ⁹Harvard Medical School, Boston, MA; ¹⁰Department of Medicine, Johns Hopkins Medical Campus, Falls Church, VA; ¹¹Center for the Study of Chronic Illness and Disability, George Mason University, Fairfax, VA; ¹²Physical Therapy, Wright State University, Dayton, OH; ¹³Epidemiology Research, American Cancer Society, Atlanta, GA; ¹⁴Department of Epidemiology and Biostatistics, University of California San Francisco, San Francisco, CA; ¹⁵Division of Cancer Control and Population Sciences, Behavioral Research Program, Health Behavior Research Branch, National Cancer Institute, Rockville, MD; and ¹⁶Public Health Science, Penn State Cancer Institute, Penn State College of Medicine, Hershey, PA

ABSTRACT

CAMPBELL, K. L., K. M. WINTERS-STONE, J. WISSEKEMANN, A. M. MAY, A. L. SCHWARTZ, K. S. COURNEYA, D. S. ZUCKER, C. E. MATTHEWS, J. A. LKIBEL, L. H. GERBER, G. S. MORRIS, A. V. PATEL, T. F. HUE, F. M. PERNA, and K. H. SCHMITZ. Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable. *Med. Sci. Sports Exerc.*, Vol. 51, No. 11, pp. 2373-2390, 2019. **Purpose:** The number of cancer survivors worldwide is growing, with over 13.5 million cancer survivors in the United States alone—a figure expected to double in the coming decades. Cancer survivors face unique health challenges as a result of their cancer diagnosis and the impact of treatments on their physical and mental well-being. For example, cancer survivors often experience declines in physical functioning and quality of life while being at increased risk of cancer recurrence and all-cause mortality compared with persons without cancer. The 2019 American College of Sports Medicine Roundtable was among the first reports to conclude that cancer survivors could safely engage in strength training to improve physical fitness and many physical functioning, enhance quality of life, and mitigate cancer-related fatigue. **Methods:** A second Roundtable was convened in 2019 to address exercise recommendations beyond public health guidelines and toward prescriptive programs specific to cancer type, treatment, and/or outcomes. **Results:** Overall findings retained the conclusion that exercise training and testing were generally safe for cancer survivors and that every survivor should “avoid inactivity.” Enough evidence was available to conclude that specific doses of aerobic, combined aerobic plus resistance training, and/or resistance training could improve common cancer-related health outcomes, including anxiety, depressive symptoms, fatigue, physical





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F.I.T.T. PRINCIPLE

FREQUENCY | INTENSITY | TYPE | TIME

F Frequency
I Intensity
T Time
T Type


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FITT Decision Tree

Adapted from Dutch PA guidelines

```



    graph TD
      RCT[Randomized Controlled Trials] --> Nstudies[N studies <5]
      RCT --> Nparticipants[N studies ≥5  
N participants ≥150]
      Nstudies --> Insufficient[Insufficient evidence  
NO FITT Rx]
      Nparticipants --> Effectclose0[Effect close to 0²]
      Nparticipants --> Effectnotclose0[Effect not close to 0²]
      Effectclose0 --> Effectunlikely[Effect unlikely  
NO FITT Rx]
      Effectnotclose0 --> Heterogeneity[Heterogeneity in direction]
      Effectnotclose0 --> Noheterogeneity[No heterogeneity in direction]
      Heterogeneity --> Emerging[Emerging evidence of potential benefit in higher quality or newer RCTs]
      Heterogeneity --> Effectunlikely2[Effect unlikely  
NO FITT Rx]
      Emerging --> Moderate[Moderate level of evidence  
FITT Rx]
      Effectunlikely2 --> Strong[Strong level of evidence  
FITT Rx]
      Noheterogeneity --> Strong
  
```



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STRONG	MODERATE	INSUFFICIENT
Anxiety	Bone Health	Cardiotoxicity
Depressive Sx	Sleep	CIPN
Fatigue		Cognitive Function
HR-QOL		Falls
Lymphedema		Nausea
Physical Function		Pain
		Sexual Function
		Treatment Tolerance

EXAMPLE

FATIGUE
(CANCER-RELATED)

Prevalence rate during CHT: 90-100%


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Exercise and Cancer-related Fatigue

- ~ 200 RCTs currently available
- Largest evidence area in the field of Exercise Oncology

Killey and Kelley *BMC Cancer* (2017) 17:693
DOI 10.1186/s12885-017-3987-5

BMC Cancer

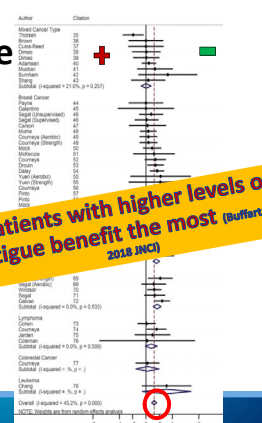
RESEARCH ARTICLE
Open Access

Exercise and cancer-related fatigue in adults: a systematic review of previous systematic reviews with meta-analyses


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Exercise and Fatigue

- Results available for various
 - cancer entities
 - Treatments
 - Timing
 - exercise approaches



Patients with higher levels of Fatigue benefit the most (Buffert et al. 2018 JNCI)


Effect Sizes

Aerobic Ex: 0.27

Resistance Ex: 0.19

Combination: 0.41

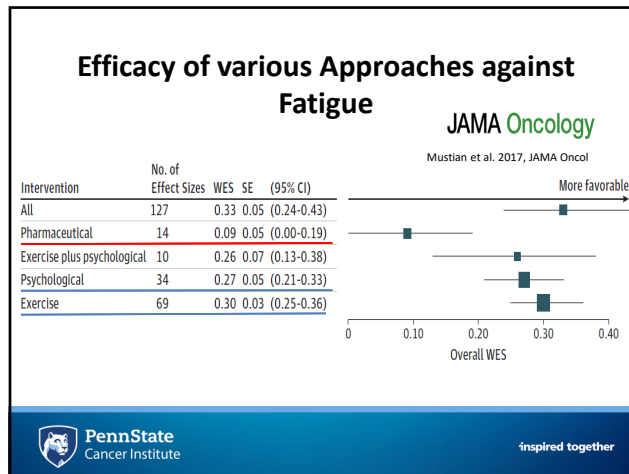
Overall: 0.32


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Effects not influenced by:

- Cancer Type
- Presence of Metastasis
- Treatment Status (during/after)
- Delivery mode (supervised/not)
- Delivery setting (group-based/not)
- Type of Exercise
- Duration
- Other methodological parameters

Subgroup	No. of Studies	No. of Patients	WES	SE	95% CI	P Value
Type of cancer						
All	57	4110	0.33	0.05	0.24-0.43	< 0.0001
Prostate	17	1078	0.33	0.05	0.24-0.43	< 0.0001
Other cancer types	33	1286	0.33	0.05	0.24-0.43	< 0.0001
Cancer stage						
All	37	2470	0.33	0.05	0.24-0.43	< 0.0001
Stage I	75	5200	0.33	0.05	0.24-0.43	< 0.0001
Stage II	4	116	0.33	0.05	0.24-0.43	< 0.0001
Stage III	23	1706	0.33	0.05	0.24-0.43	< 0.0001
Timing of intervention						
All	74	5127	0.33	0.05	0.24-0.43	< 0.0001
Before or during treatment	29	1518	0.33	0.05	0.24-0.43	< 0.0001
After treatment	29	2281	0.33	0.05	0.24-0.43	< 0.0001
Supervised vs. unsupervised						
All	11	549	0.33	0.05	0.24-0.43	< 0.0001
Supervised	122	8376	0.33	0.05	0.24-0.43	< 0.0001
Unsupervised	59	3624	0.33	0.05	0.24-0.43	< 0.0001
Physical Activity Intervention Type						
All	34	1601	0.33	0.05	0.24-0.43	< 0.0001
Resistance	13	761	0.33	0.05	0.24-0.43	< 0.0001
Cardiorespiratory	35	2032	0.33	0.05	0.24-0.43	< 0.0001
Mixed	3	138	0.33	0.05	0.24-0.43	< 0.0001
Mode of Physical Activity Intervention Delivery						
All	95	6103	0.33	0.05	0.24-0.43	< 0.0001
Supervised	38	2023	0.33	0.05	0.24-0.43	< 0.0001
Unsupervised	41	3962	0.33	0.05	0.24-0.43	< 0.0001
Delivery setting						
All	44	2819	0.33	0.05	0.24-0.43	< 0.0001
Group-based	72	5215	0.33	0.05	0.24-0.43	< 0.0001
Individual	46	2937	0.33	0.05	0.24-0.43	< 0.0001
Number of Weeks - Physical Activity Intervention						
All	72	5215	0.33	0.05	0.24-0.43	< 0.0001
< 12 weeks	30	1665	0.33	0.05	0.24-0.43	< 0.0001
≥ 12 weeks	72	5116	0.33	0.05	0.24-0.43	< 0.0001
Minutes per Week - Physical Activity Intervention						
All	91	6105	0.33	0.05	0.24-0.43	< 0.0001
< 150 min	41	2572	0.33	0.05	0.24-0.43	< 0.0001
≥ 150 min	61	4499	0.33	0.05	0.24-0.43	< 0.0001
Adherence Sequence Comparison						
All	72	4518	0.33	0.05	0.24-0.43	< 0.0001
High	61	4499	0.33	0.05	0.24-0.43	< 0.0001
Low	72	4518	0.33	0.05	0.24-0.43	< 0.0001



Sum Up – Fatigue

Overall:
 AT and/or RT positively impacts Fatigue
 Stable against modifying factors
 Effects are seen for
 General/Overall Fatigue
 QOL survey Physical Fatigue

Range of FITT applied in studies:

	Frequency	Intensity	Time	Type
Resistance	2-3x/week	8-15 RM	1-3 sets 8-15 Reps 6-24 wks	Machine based, Bands
Aerobic	2-6x/week	50-95% HR Max RPE 12-16	15-90 min 6-24 wks	Treadmill, Cycle, Walking

Lymphedema

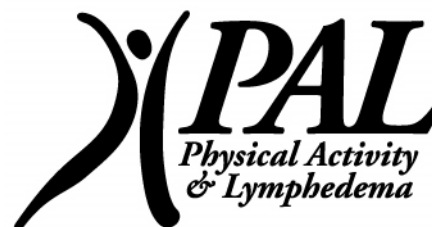
*Specific to Breast Cancer Related Lymphedema

Trials included

- Ahmed et al. 2006
- Courneya et al. 2007
- Schmitz et al. 2009
- Schmitz et al. 2010
- Kilbreath et al. 2012



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R01-CA106851



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The Physical Activity and Lymphedema (PAL) Trial

- 1 year randomized controlled intervention
 - Twice weekly progressive strength training
 - Non-exercising control
- **Primary aim:** To determine whether there are any changes in lymphedema outcomes
 - 2 separate trials
 - WITH lymphedema
 - AT RISK FOR lymphedema
 - Powered independently



THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Weight Lifting in Women with Breast-Cancer-Related Lymphedema

Kathryn H. Schmitz, Ph.D., M.P.H., Rehana L. Ahmed, M.D., Ph.D.,
 Andrea Troxel, Sc.D., Andrea Cheville, M.D., Rebecca Smith, M.D.,
 Lorita Lewis-Grant, M.P.H., M.S.W., Cathy J. Bryan, M.Ed.,
 Catherine T. Williams-Smith, B.S., and Quincy P. Greene

August 18, 2009



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JAMA
The Journal of the American Medical Association

Weight Lifting for Women at Risk for Breast Cancer-Related Lymphedema
A Randomized Trial

Published Online First December 8, 2010

Available at www.jama.com

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Summary

- Twice weekly slowly progressive strength training is SAFE for breast cancer survivors who have had lymph node removal including
 - Those WITH lymphedema
 - Those AT RISK FOR lymphedema
- Risk of lymphedema flare-ups decreased by HALF
 - Cost effectiveness?
- Among at-risk women with 5+ nodes removed, risk of ↑ arm swelling is reduced by 70%
- Substantive strength improvements
- Body image, appendicular skeletal muscle mass improved
- Reduction in physical function prevented

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Sum Up - Lymphedema

- Finding of SAFETY for RESISTANCE TRAINING
- All trials
 - started with SUPERVISION
 - Started with 'start low, progress slow'
- Preliminary data for lower limb lymphedema does not support assuming that the results translate
- No evidence available for aerobic training
 - Presumed safe based on lack of reports of adverse events

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MOVING THROUGH CANCER: Exercise for people living with and beyond cancer

TO GET STARTED
Avoid inactivity; moving more and sitting less benefits nearly everyone

FOR OVERALL HEALTH
Aim to meet the current exercise guidelines for adults*

Moderate Aerobic Exercise At least 150-300 mins per week OR Vigorous Aerobic Exercise At least 75-150 mins per week (or a combination of moderate/vigorous aerobic exercise)

Resistance Exercise 2x per week

FOR PEOPLE DURING & FOLLOWING CANCER TREATMENT
Research shows lower amounts of exercise can still help with the following cancer treatment-related symptoms:

Considered fatigue, Health-related quality of life, Physical function, Anxiety, Depression, Sleep, Lymphedema†, Bone health‡

To improve these symptoms, choose an exercise plan below:

Aerobic Exercise 2x per week 30-60 min OR Resistance Exercise 2x per week 2 sets/8-15 reps OR Aerobic Exercise 2x per week 20-40 min + Resistance Exercise 2x per week 2 sets/8-15 reps

*Physical Activity Guidelines for Americans, 2018
†Progressive supervised resistance training does not exacerbate lymphedema
‡At least 3 times/week resistance training plus high impact training, needed

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Overview of new Ex Rx for People Living With and Beyond Cancer

- Avoid Inactivity
- General public health related guidelines for
 - Primary prevention
 - Secondary prevention
- For specific outcomes, if there is no FITT prescription, default to general public health guidelines
 - 150 min aerobic, 2 sessions resistance exercise per week
- For 8 cancer health related outcomes with sufficient evidence:
 - Aerobic Exercise 3x weekly, up to 30 minutes
 - Resistance training 2 sets, 8-12 reps, 2x weekly
 - No comment on flexibility activities

CA: A Cancer Journal for Clinicians


Exercise Is Medicine in Oncology: Engaging Clinicians to Help Patients Move Through Cancer

Kathryn H. Schmitz, PhD, MPH^{1,2}, Anna M. Campbell, PhD^{3,4}, Martijn M. Steiner, PT, PhD^{5,6,7,8,9,10},
Bernadine M. Pinto, PhD¹¹, Anna L. Schwartz, PhD¹², G. Stephen Morris, PT, PhD¹³, Jennifer A. Ligibel, MD¹⁴, Andrea Cheville, MD¹⁵,
Daniel A. Galvão, PhD¹⁶, Catherine M. Alfano, PhD¹⁷, Alpa V. Patel, PhD¹⁸, Trisha Hua, PhD¹⁹, Lynn H. Garber, MD²⁰,
Robert Sallis, MD²¹, Niraj J. Gaurani, MD, MS²², Nicole L. Stout, PT, PhD²³, Leighton Chan, MD, PhD²⁴, Fiona Flowers, BS²⁵,
Colleen Doyle, MS, RD²⁶, Susan Helmsch, PhD²⁷, William Baas, PhD²⁸, Jonna Sokoloff, DO²⁹, Keri M. Winters-Stone, PhD³⁰,
Kristin L. Campbell, BS, PT, PhD³¹, Charles E. Matthews, PhD³²

¹Department of Public Health Sciences, Penn State College of Medicine, Hershey, Pennsylvania; ²School of Applied Sciences, Edinburgh Napier University, Edinburgh, United Kingdom; ³Center for Quality of Life, Netherlands Cancer Institute, Amsterdam, The Netherlands; ⁴ACHIEVE, Faculty of Health, Assen University of Applied Sciences, Assen, The Netherlands; ⁵Department of Clinical Epidemiology, Biostatistics and Biinformatics, Amsterdam UMC, University of Amsterdam, Amsterdam, The Netherlands; ⁶School of Nursing, Northern Arizona University, Flagstaff, Arizona; ⁷Department of Physical Therapy, Virginia University, Winchester, North Carolina; ⁸Division of Women's Cancer, Dana-Farber Cancer Institute, Boston, Massachusetts; ⁹Department of Physical Medicine and Rehabilitation, Mayo Clinic, Rochester, Minnesota; ¹⁰Exercise Medicine Research Institute, Edith Cowan University, Joondalup, Western Australia; ¹¹Department of Health, Behavior, and Society, Johns Hopkins University, Baltimore, Maryland; ¹²Department of Health, Behavior, and Society, Johns Hopkins University, Baltimore, Maryland; ¹³Department of Health, Behavior, and Society, Johns Hopkins University, Baltimore, Maryland; ¹⁴Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ¹⁵Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ¹⁶Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ¹⁷Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ¹⁸Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ¹⁹Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁰Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²¹Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²²Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²³Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁴Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁵Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁶Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁷Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁸Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ²⁹Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ³⁰Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ³¹Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts; ³²Department of Radiation Oncology, Dana-Farber Cancer Institute, Boston, Massachusetts.

Multiple organizations around the world have issued evidence-based exercise guidance for patients with cancer and cancer survivors. Recently, the American College of Sports Medicine has updated its exercise guidance for cancer prevention as well as for the prevention and treatment of a variety of cancer health-related outcomes (eg, fatigue, anxiety, depression, function, and quality of life). Despite these guidelines, the majority of people living with and beyond cancer are not regularly physically active. Among the reasons for this is a lack of clarity on the part of those who work in oncology clinical settings of their role in assessing, advising, and referring patients to exercise. The authors propose using the American College of Sports Medicine's Exercise Is Medicine initiative to address this practice gap. The simple proposal is for clinicians to assess, advise, and refer patients to either home-based or community-based exercise or for further evaluation and intervention in outpatient rehabilitation. To do this will require care coordination with appropriate professionals as well as changes in the behaviors of clinicians, patients, and those who deliver the rehabilitation and exercise programming. Behavior change is one of many challenges to executing the proposed practice changes. Other implementation challenges include capacity for triage and referral, the need for a program registry, costs and compensation, and workforce development. In conclusion, there is a call to action for key stakeholders to create the infrastructure and cultural adaptations needed so that all people living with and beyond cancer can be as active as is possible for them. *CA Cancer J Clin* 2019;111:1-17. © 2019 American Cancer Society.

Keywords: exercise, physical medicine and rehabilitation, physical therapy, supportive care.

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Current State


- < 25% of cancer patients are adequately active
- Multifactorial causes include:
 - Lack of referral from clinicians
 - 9% of nurses refer patients to exercise
 - 20% of physicians refer patients to exercise

Why don't clinicians talk to patients about exercise?

- Lack of **awareness** of the potential value of exercise in cancer populations
- Uncertainty regarding safety or suitability of exercise for a particular patient,
- Lack of **awareness** regarding available programs to help facilitate exercise in cancer populations
- Need for education and skills development for making referrals
- Belief that referrals to exercise programming is not within the scope of practice for oncology clinicians


Recommendation

- Apply the Exercise Is Medicine approach
 - Assess
 - Advise
 - Refer
- Similar approach to that used for DISTRESS screening


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The Triage Step: Catch-22

- Clinicians are asked to clear patients for exercise for MANY programs
- We ask that clinicians clear for programs
- Are they qualified to do so?
- Who is?
- Who is in the system who can do this work?
- Lack of valid triage schema



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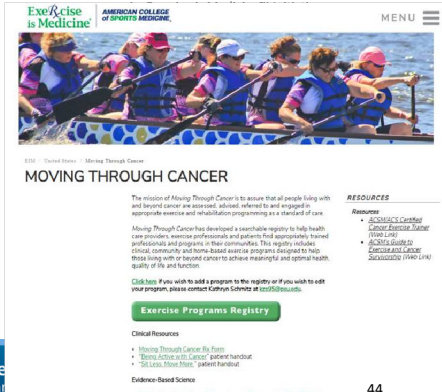
Refer WHERE???


We have developed a registry of exercise programs for people living with and beyond cancer @

www.exerciseismedicine.org/movingthroughcancer

Release Date: 16 October 2019

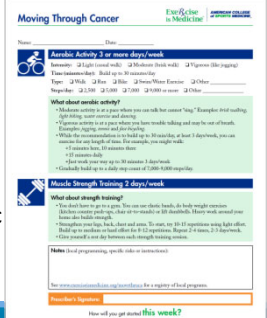

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Moving Through Cancer Rx Pad

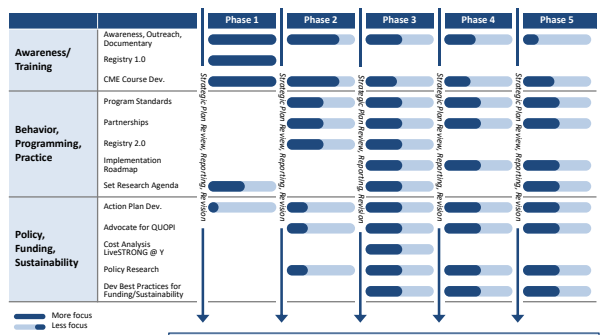
- Intended to ease referrals
 - Assess, advise, refer
- Need to train clinicians
 - Raise awareness
 - Clarify how easy it can be
 - Document benefits in clinic



MANY other challenges

- Transitions from PT to community and back
- Behavioral issues
- Workforce development
- Policy issues
 - Triage methods
 - Payment model for services

Moving Through Cancer



What is Possible? Jollie's story

Exercise Oncology in Action




Spring 2011
210 lb.
15 yr. since
USMC
40 yrs old

Spring 2012
195 lb.
"My favorite
chemo chair"

- 5/11 Friend invited to train for Sprint TRI (Oct. 2011)
- 6/11 32 min 5k, Exhausted after 5 laps in pool
"...I know I'm out of shape, but I shouldn't be THIS tired?"
- 7/11 Developed what felt like chest congestion. Nothing significant on chest scan
PCP prescribed albuterol for, "Adult Onset Asthma"
- 8/11 Swim/Run Brick - 1 mi into run friend says, **"Damn Jollie, I didn't know you had asthma!"**
"...I was wheezing so bad it sounded like I swallowed a whistle!"
- 9/11 PCP orders 2nd chest scan, **"...looks like you have an enlarged heart. Probably nothing, just an athletes' heart. I'll have my friend who's a radiologist review"**
- 10/11 Radiologist recommends CT - **Stage 3 lymphoma**
- 12/11 Biopsy reveals Small Lymphocytic Lymphoma
- 01/12 6 cycles bendumustine + rituximab
- 01/12 LLS training started

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Marine Corps
Marathon
2012
(5 mo. After chemo)


Outer Banks
Olympic TRI
2013

Pinehurst, NC
Olympic TRI
2014

Bull City
Half
2018

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- 06/16 Relapsed (4 yr. remission) Felt enlarged node under (L) armpit during shower
- 08/16 Oral targeted therapy
- 01/17 Increasing fatigue, growing significant
"...I felt myself going to a dark place & I didn't like it! I didn't want to work & didn't want to talk to my wife or kids...after 4 days of increasing depression by the day, I told my wife at 10:30pm I had to go run! One mile into the run, my fatigue & depression just vanished! I discovered I could keep the fatigue & depression away, as long as I exercised every other day!"
- 10/17 Ironman 70.3 North Carolina

*Ongoing symptoms from oral targeted medication (arthralgia & mucositis) are manageable & controlled with stretching exercises & valacyclovir

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Today (Fall 2019)...

"Ideal" Training Plan

- M Rest
- T Run 3 mi. HIIT + Swim 20 laps
- W Bike 20 mi.
- R Run 6 mi. Tempo
- F Run 3 mi HIIT + Swim 20 laps
- S Swim 30 laps + Bike 36 mi.
- S Run 10 mi.


*With 21 yr., 17 yr. & 22 mo. girls and with another 5 mo. old foster child and a busy career, I almost always get Sat. & Sun workouts in, but only 2-3 workouts during the week

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Jollie's Takeaways

- Teach your patients to listen to their body. They will know something's wrong before a lab test. If something feels off, don't ignore it!
- Be quick to refer patients to allied health professionals (exercise, nutrition, psychological). Medicine & surgery are not your only tools!
- Exercise can reduce &/or eliminate medication symptoms & reduce reoccurrence of some cancers
- Exercise gives patients control of their lives' back!


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Case Study NORMA

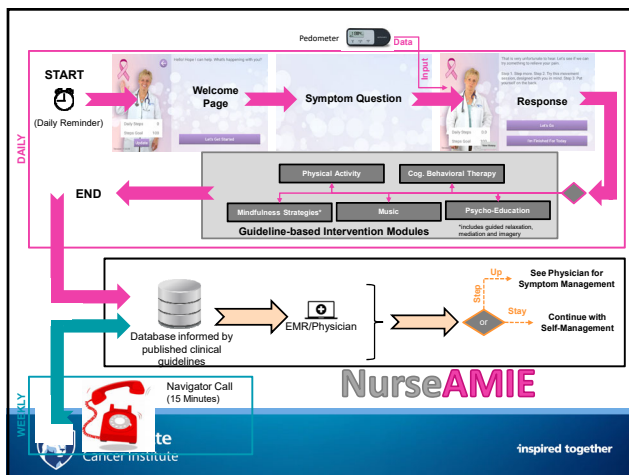
- **Age:** 61
- **Diagnosis:**
 - Metastatic Breast Cancer (metastatic at diagnosis in 2016). Compression fracture with diffused metastatic tumors of vertebral spine. Extracerebral extension of tumors in posterior vertebral body caused spinal cord compression.
- **Other chronic conditions:**
 - Asthma
 - Type 2 diabetes
 - Controlled hypertension
 - Obesity
- **At Enrollment**
 - Ambulated with a walker
 - Had to take frequent breaks to sit down due to weakness in her legs
 - Prior spinal surgery
 - told she would be mostly bedridden


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Nurse AMIE

- Tablet based supportive care intervention
 - Daily symptom questions
 - Daily interventions
 - Walking (FitBit, progressive goals)
 - Resistance, balance, and flexibility exercise
 - Mindfulness Meditation
 - CBT
 - Music
 - Discussion Board (social support)
 - Weekly navigator call


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Norma!



- **At end of study**

- Averaging 10,000 steps/day
- Able to ambulate on her own with no assistance but carried a cane for long distances.
- When she met with the patient navigator she strutted in swinging her cane in circles to show how well she could walk on her own.

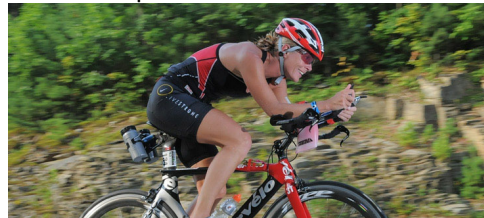
- *“when I came over here, I was on the walker but now I’m using the cane because I’ve been doing the exercise and my bones have been getting stronger. I love nurse AMIE. It helped me a lot, when I do exercise it helps with the pain in my legs, I suffer from a lot of pain”*



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And the list goes on...

- Syndy Hooper – pancreatic cancer survivor
Ironman competitor



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And on...

- Susan Helmrich –
 - 3 time survivor
 - DES Daughter
 - Lung
 - Pancreatic
 - masters swimmer



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And on...

- Gabrielle Grunewald –
 - Adenoid cystic carcinoma diagnosed 2011
 - Sponsored, Ranked USATF runner
 - Placed 4th in 1500 in London Olympic Trials
 - National Champion 3000m in 2014



‘There are two ways to live your life:
The first is as if nothing is a miracle.
The other is as if everything is a miracle.’



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And on....

- Mike Levine
 - Stage 4 Pancreatic Cancer
 - Ironman competitor



"When I was diagnosed with aggressive breast cancer, it was incredible how quickly my athlete frame of mind took over. I made a public commitment to stay active. I rode my bike to and from treatments and stopped at the gym on my way. Days I felt totally unlike myself and miserable, I would get out and do something for at least 10 minutes. Moving helped me feel better physically, and more importantly, it gave me a mental victory. I credit staying physically active for helping my body process the treatment.

I continue to raise awareness of how important physical activity is for preventing cancer, getting through cancer and recovering through cancer. I am the biggest advocate now that I've been through it myself. I hope to continue using my platform to help move this forward until physical activity is a prescriptive part of treatment for all."

Kikkan Randall
2019 ACSM Annual Meeting



It's time for these examples to stop being exceptional.

It's time for a paradigm shift:


Exercise Is Medicine for People Living With and Beyond Cancer

General Conclusion

- Exercise may not make a cancer go away, but it will
 - Put the patient back in control
 - EMPOWERMENT
 - Manage symptoms
 - Slow the trajectory for loss of function and lean mass

Exercise is Medicine®

DrKatieSchmitz@gmail.com

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Partners



SSO Society of Sports Oncology
ACSM National Commission on Exercise Prescription
American College of Lifestyle Medicine
ESSA Exercise Specialist Society
IBP International Board of Physical Therapy
APTA American Physical Therapy Association
International Cancer Society

Sunflower Foundation
DVGS
CDC Centers for Disease Control and Prevention
aapm&r American Association of Physical Medicine and Rehabilitation
ASCO American Society of Clinical Oncology
WE ARE BRACYPILLAN. CANCER SUPPORT
COAT Cancer Outcomes Assessment Tool
FPMR Federation of Physical Medicine and Rehabilitation

CSEP SCPE

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