

Historical Role of Exercise and Activity with the Cancer Population

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Definition of the Field

- ✿ PA and cancer survivorship or exercise oncology.
- ✿ studies the role of PA in people who have been diagnosed with cancer (i.e., cancer survivors).
- ✿ multidisciplinary field that overlaps with, or is subsumed by, many other fields:
 - ✿ kinesiology, oncology, cancer survivorship, supportive care, psychosocial oncology, oncology nursing, epidemiology, integrative oncology, behavioral medicine, PA and cancer.

(Courneya *Exer Sport Sci Rev* 2014;42:102-109)

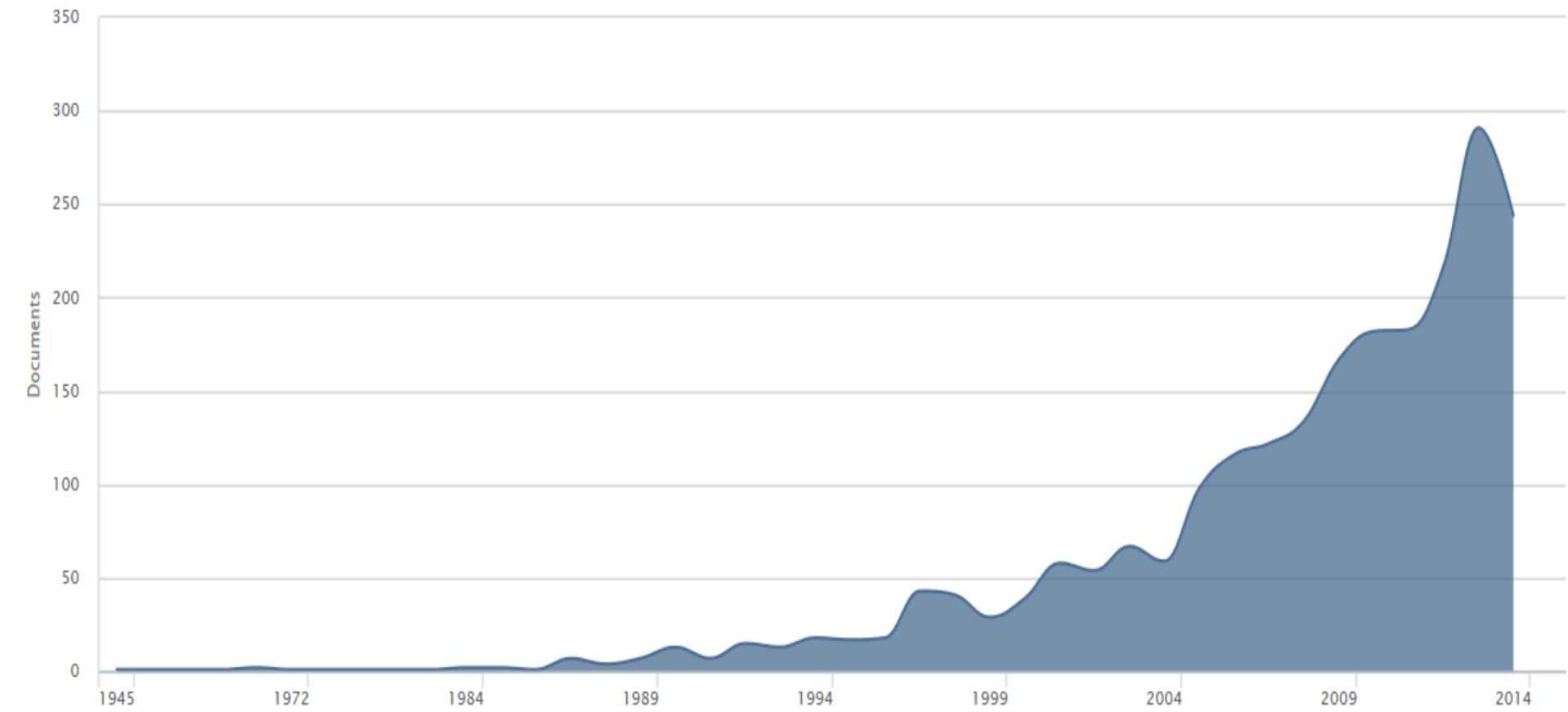
Physical Activity and Cancer

- ★ from prevention to survivorship.
- ★ early PA research focused on primary prevention.
- ★ lifestyle important for prevention (50-70 years);
biomedical important for treatment (<5 years).
- ★ shift towards a multidisciplinary approach to cancer control where lifestyle now studied for survivorship
(and biomedical now studied for prevention).

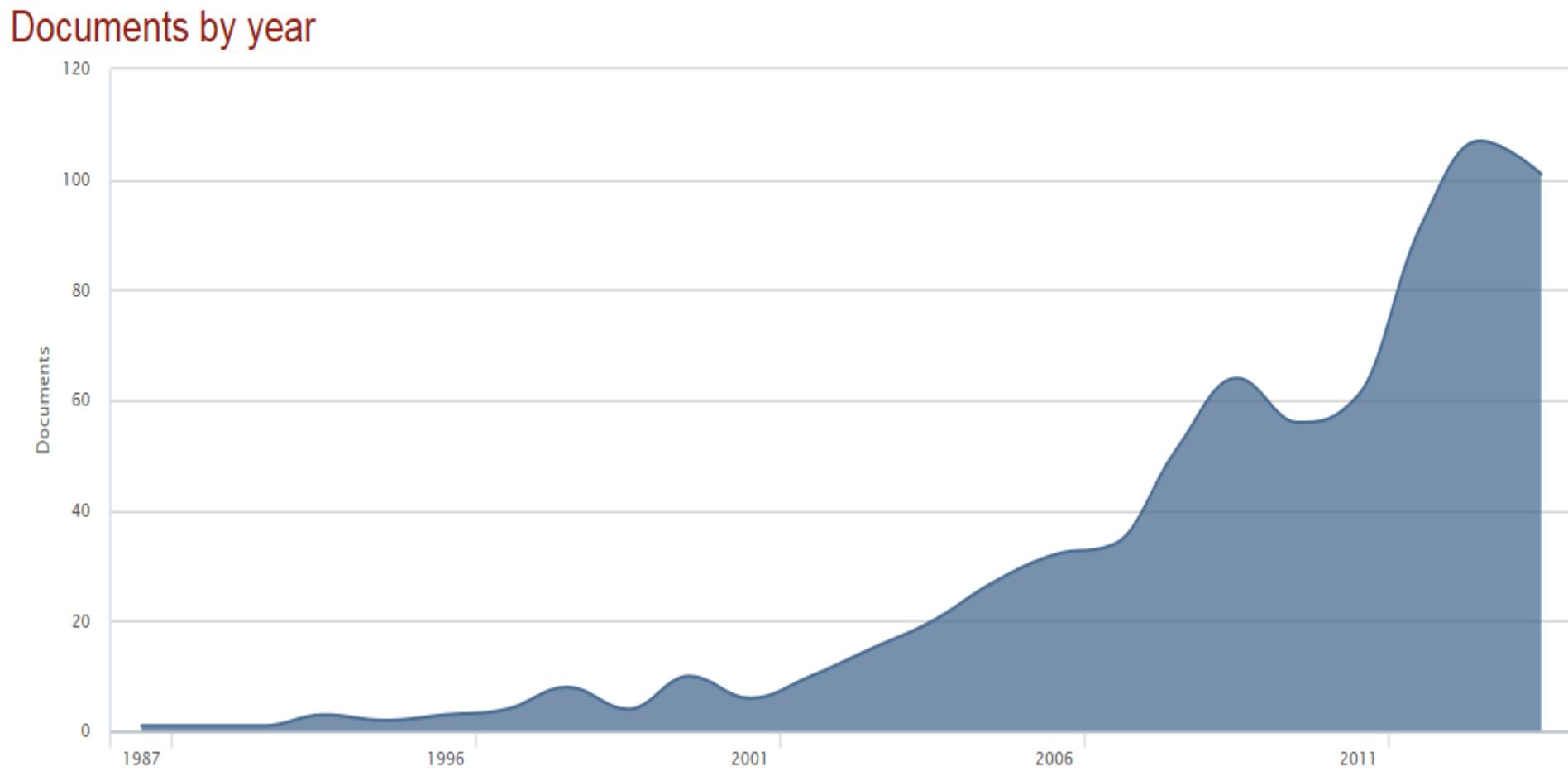
(Courneya *Psycho-Onc* 2009;18:337-342)

“PA/EX” and “Cancer” in the Title (Scopus: N=2,279)

Documents by year



“PA/EX” and “Cancer Patient/Survivor” in the Title (Scopus: N=712)



What Changed?

- ✿ improved survival rates.
- ✿ shift to include quality of life (and symptom management) as important outcomes.
- ✿ better tolerated/managed treatments.
- ✿ interest in long term cancer survivorship.
 - chronic and late-appearing effects.
 - cancer survivors die of other diseases (e.g., CVD).

(Courneya *Psycho-Onc* 2009;18:337-342)

Early Exercise Oncology Studies

- ✿ master's thesis by Linda Buettner (1981).
 - ✿ partially supervised, 8-week, combined exercise intervention in 17 posttreatment cancer survivors; reported some improvements in physical fitness but not personality.
- ✿ doctoral dissertation by Maryl Winningham (1983).
 - ✿ 10-week, supervised aerobic exercise in 4 breast cancer patients during chemotherapy and reported improvements in fitness similar to 4 healthy controls.
- ✿ immune function and lung surgery complications.

From Treatment to Survivorship

- ✿ most early studies focused on the active treatment phase (e.g., chemotherapy).
- ✿ shift toward the survivorship or posttreatment phase.
- ✿ some interest in the pretreatment or prehabilitation phase (e.g., presurgery) and advanced cancer phase.
- ✿ interest in other treatments (radiotherapy, hormone therapy, targeted therapy).

From Breast to “Other” Cancers

- ✿ most early studies focused on breast cancer.
- ✿ some studies focused on mixed cancer diagnosis.
- ✿ many studies now on prostate cancer.
- ✿ most other cancers still understudied (e.g., colorectal, lung) or not studied at all (e.g., liver, pancreatic).

From Aerobic to Resistance Exercise

- * most early studies focused on aerobic exercise.
- * many now focused on resistance exercise.
- * strong interest in yoga and “mind-body” exercises.
- * growing interest in examining sedentary behavior.
- * early interest in high intensity interval training.
- * early interest in extreme sport/adventure therapy.

From UC to EX Comparison Groups

- ✿ most early studies compared exercise to nothing.
- ✿ some studies now compare exercise prescriptions.
- ✿ goal of “second generation” studies is to identify optimal exercise prescriptions for outcomes.
- ✿ optimal type, frequency, intensity, and duration but also sequencing, periodization, and context.

From Fitness/Quality of Life to Survival

- ★ most early studies focused on QoL.
- ★ many focused on health-related fitness.
- ★ strong interest in symptom control.
- ★ some interest in treatment factors.
- ★ growing interest in recurrence/survival.
- ★ growing interest in mechanisms/biomarkers.

From Efficacy to Effectiveness

- * most early studies well-controlled efficacy trials.
- * more recent studies focused on effectiveness (e.g., home-based programs, distance-based support, heavy technology, cost effectiveness).
- * strong interest in PA behavior change trials, especially with long term adherence.

Summary and Conclusions

- ✿ historically, PA viewed as a modifiable risk factor for primary cancer prevention.
- ✿ any role after diagnosis was to treat the tumor.
- ✿ early studies paved the way for an expanded PA role.
- ✿ the fields of oncology and kinesiology have evolved such that PA is an important part of cancer care.
- ✿ the field continues to evolve and much more research will be done.