EXERCISE:
WHAT’S IT ALL ABOUT?!
INTRODUCTION

• Survivorship to Cancer is growing.
• Impact of co-morbidities on those with Cancer
• Impact of childhood cancer treatments - unknown impact on aging population
• Unique role of Rehab before, during and after treatment with multidisciplinary approach
• STAR (survivorship Training and Rehab) program
  • Brought to light uniqueness of cancer patient needs
  • Addressed all stages of cancer treatment regimes (pre/post/during)
  • Began by Julie Silver MD herself a cancer survivor
  • Importance of multidisciplinary approach to fully appreciate patient needs
  • Evidence based for effective implementation in addressing issues
  • Closed 2017
  • Cancer in the US 2017 will probably surpass heart disease as number 1 cause of death (over 600,000) (Spector 2016),
EXERCISE

Components:
- Strength
- ROM
- Flexibility
- Balance/coordination
- Agility
- Endurance
- Aerobic/Aerobic
GOTTA FIND YOUR GROOVE!

Finding your motivation
BENEFITS FOR ALL

All Populations have reduction in:
* BP,
* Risk/reversal of Diabetes, MI, Stroke
* Risk of several forms of Cancer
* Osteoporosis and risk of fall
* Arthritis pain and associated disability
* Depression and anxiety

Specific to Cancer patients:
* Reduced Cancer related fatigue
* Improved cardiopulmonary function
* Increased bone mineral density
* Improved QOL
TRENDS AND CAVEATS

• Neuropathy from chemo and neurotoxicity
• Increased risk of fall with >4 meds
• Co morbidities (DM, CVD, OA, RA etc....)
• Stress is increasing: cognitive/sleep issues w/ negative physical effects
• Survivorship of childhood cancers with unknown effects on aging
• Reduced Hgb, abnormal platelets
• Radiation sequela (lungs/heart/lymph system/nerves/wounds)
WHEN IS IT BEST TO BEGIN?!

• Before Cancer treatment begins
• During any phase of Cancer treatment
• Post completion of Cancer treatment
EB PREHABILITATION

• Cancer rehab involving exercise has demonstrated improvement in cognition, fatigue, vitals (as per 6MWT) and QOL indicators
  

• 57 prehab/59 control. Trimodal with nutrition, exercise and counseling on relaxation.
  
• 4 week program done on prehab group, control received after treatments were completed
  
• Prehab group had significant return to moderate/vigorous intensity activity and improved 6MWT
EB PREHABILITATION

• Further references:


Multiple cancers considered, 18 studies, international involvement. 1 day to 3 weeks prehab with Psych, education, ex. Prostate (reduced leakage with PFMT), reduced hospital stay with lung CA Sx, improved mood physical well being with prostate, reduced fatigue with breast cancer.


Improved Physical/Psych throughout Pt Rx, baseline for insight of impact, reduced LOS and readmits, reduced financial burden. Importance of NN.
• Team approach is best (LE, ST, OT, PT, Psych, NN w/patient and the center and MD each HCP views a different facet of the same jewel.

• There is an overflow of each discipline which enhances cohesiveness and application of THEIR QOL
  • Consider stress; tools to combat and recognize this can be reinforce. Reduction will allow clearer thinking, reduce fatigue, empower patient
  • Joint pathologies: modification of lifestyle with education and safe alternative without ‘paying for it’ by 1 on 1 contact and reinforcement from multiple HCP
  • Cognitive limitations: re-engage with social activities is essential. Dance, learning new activities, remapping of brain pathways, engaging in cognitive and kinesthetic activities.
  • ‘Your Brain After Chemo” by Dan Silverman and Idelle Davidson.
• How much and how long does matter!


  447 articles reviewed, 9 used

  531 patients mean age 58 (48-68).

  All cancers included

  4-18 week programs including hi-intensity (4min intense intervals) vs moderate consistent exercises

  hi intensity best results with increase VO2 max, strength, waist to hip ratio compared to moderate consistent activity

  Mixed intensity with aerobic and resistive activity most effective
HI-INTENSITY

- varied bursts of intense exercises 80-95% MHR
- Lasts 5 sec to 8 min
- Rest interval same time frame at 40-50% MHR
- Total time 20-60 min
- Benefits: aerobic/anaerobic fitness, BP, CV health, Insulin sensitivity, cholesterol, abdominal fat and wt reduction without loss of muscle mass
- EPOC (excess post ex O2 consumption) lasts 2 hours as body restores itself and burns more calories than a general routine
- Can be done with any ex routine: walk, cycle, run, elliptical and in groups
  - According to the ACSM
CANCER EXERCISE IS DIFFERENT

• Karvonen scale
  • $\text{THR} = ((\text{MHR} - \text{RHR}) \times \% \text{Intensity}) + \text{RHR}$
  • Calculator can be found on www.briancalkins.com/HeartRate.htm

• Chemo 3 months post
  • Work at 50-60%

• Chemo 6 months post
  • Work at 60-70%
• Reduction in sequela of treatment regimes


302 abstracts/53 used.

Exercise done pre, during and post cancer treatment.
At each phase, benefits in reducing sequela of Ca regimes found.
Positive outcomes were with moderate to vigorous exercises.
Supervised exercises with best outcomes.
Negative effects were uncommon.
WHERE YOU ASK?

• In what environment should exercise be delivered?


  Included: OP, Personal trainer, home, combination of home and OP.
  All showed promise of improvement in physical function with clinical significance.
Home or community based exercises.


14 studies (83 mean number included). Mostly breast cancer

Both increased physical function but greatest benefit was community

Tools used: Medical Outcomes Study 36-Item Short-Form, late-Life Function and Disability Instrument, European Organization for the Research and Treatment of Cancer Quality-of-life Questionnaire, 6 min walk test.
EXERCISE WITH A ‘TWIST’


Over 14,000 articles reviewed, used 21 (13 mixed tumor, 7 breast, 1 prostate).

Interventions: Physical, psychological/behavioral, multidimensional and on-line approach. Face to face interventions combined with online, phone and paper reading materials.

Yoga most helpful, ex in general in ST (3-8 mo) and LT. Cognitive/mindful interventions helpful ST.

All interactive forms were equal in effective results.

• Pilates, Yoga, Tai Chi Chuan, Qigong and varied dance
• Potential to address the multidimensional aspects of Cancer patients
  Whole body movement and cognitive engagement
  strength/balance/coord/posture/flexibility/kinesthetic awareness
• Traditional/conventional exercises may not address this
• Often affordable
• Drawbacks: knowledge of teacher, not individualized
• What about RT fatigue?!


• 9 studies (802 participants).
• Exercise statistically more effective to reduce fatigue than control
• Specifically supervised w/combined aerobic and resistance exercises

33 studies

Improvement in 6MWT distance and knee extensor strength on all 4 conditions

Reduction of disease specific pain and stiffness of OA
And what about Lymphedema?!


- 10 trials with 1205 patients
- f/u 2 days to 2 years after intervention.
- MLD and MLC w/ex, Ex alone
- Reduced edema w/ex and MLD w/ex.
- Education along not significant
- No harm detected with exercises
- Early intervention increased ROM at 6 months with no difference at 12

- 56 studies (RCT and quasi RCT) 4826 patients (2286 w/ex, 1985 w/o). 36 current, 10 pre, 10 during and post cancer treatment.
- Breast, prostate, gynecological and hematopoietic.
- Consistency in improved behavior 0-12 weeks
- Significant difference between groups at 12 weeks,
- 6 month f/u with continued functional gains in physical, social and role functions as well as reduced fatigue
- Breast cancer in particular displayed reduced anxiety.

• Gait speed associated with frailty of those over 65

• 46 articles

• Gait speed predictor of early death, disability, falls, hospitalizations—few studies in geriatric oncology but it seems to predict overall survival of disability.

• Predictive threshold of 1 m/s as a frailty screen for those >65 yoa.

- 16 trials 648 patient.
- SR on breast prostate and colorectal cancer 18yoa and older.
- Focus on improved engagement with ex habits
- Promoting ex routine/habits from supv to non-supv.
- 75% achieved 150 minutes weekly
- Still doing at 6 months.
- Unrealistic for those who are sedentary
ROLE OF NURSING

- Highlight's role of nursing
- Good position to judge risk of injury w/community based ex
- Good position to assess need of multidisciplinary approach to improve QOL

• Part 2. Impact of Multidisciplinary Rehabilitation and Psychosocial, Sexuality, and Return-to-Work.

• Example of multidisciplinary approach and contributions to care of Ca patient
• OT approach with reduced fatigue, LE not exacerbated w/ex,
• Moderate evidence of Yoga for reduced anxiety, depression.
• Strong evidence or reduction of anxiety and depression
• Moderate evidence supporting return to level of desired sexuality and RTW
BOTTOM LINE

• Introduction of exercise/rehab is valuable at any phase
• Evidence indicates that pre cancer treatment has significant value of enhanced function, some QOL indicators, quicker return to exercise and functional activities.
• Best outcomes were with a supervised program with someone familiar with the particular issues of the cancer patient needs and deficits
• Home based, Hospital, OP, and community classes/group activities all have been able to demonstrate a positive value in restoration of function and quality of life
• Use tools/modalities that are pleasing and desirable to the patient. Greater success with reduced fatigue, longevity of continued performance, improved cognition