

AuSPEN ASM
Friday 7th November 2025

Building capacity in computed tomography (CT)-based body composition analysis

Development and implementation of an online education program

Presenter: Dr Lauren Hanna

APD, Postdoctoral Research Fellow
Monash University

On behalf of the team:

Professor Judy Bauer, Monash University
A/Clin Professor Merran Findlay, University of New South Wales
Professor Vickie Baracos, University of Alberta
Dr Lisa Martin, University of Alberta
Abha Dunichand-Hoedl, University of Alberta



Computed tomography

Gold standard body composition method in clinical research

Usually uses axial cross-sectional CT image at L3

Muscle and adipose tissue segmented using pixel radiodensity (Hounsfield Unit) ranges

	Tissue	Hounsfield Units (HU)
	Skeletal Muscle (SM)	-29 to +150
	Visceral Adipose Tissue (VAT)	-150 to -50
	Subcutaneous Adipose Tissue (SAT)	-190 to -30

Mean radiodensity of muscle tissue area indicates muscle composition/quality (low quality = myosteatosis)



Analysis software

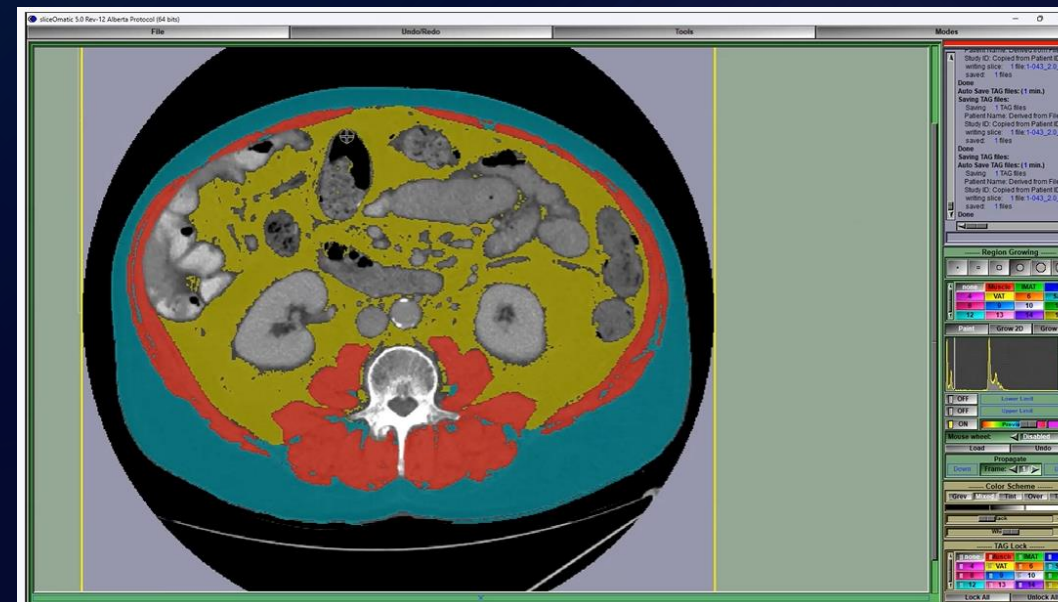
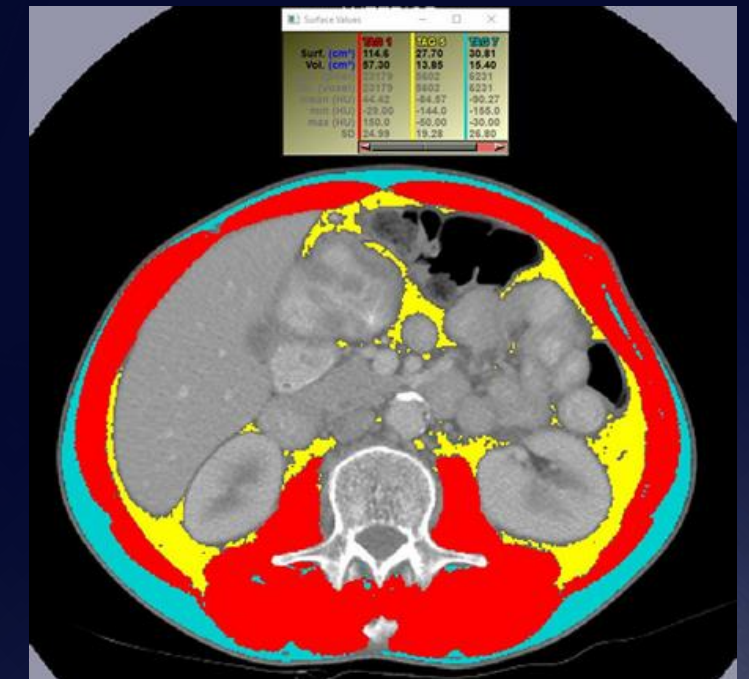
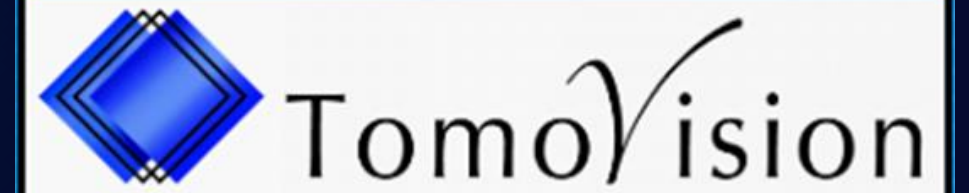
Sliceomatic was the first software devised for multi-slice muscle/fat analysis, released by Tomovision in 1994

Developed for body composition research

Segmentation can be completed manually, using the automated 'ABACS' module, or the AI module

Many other software programs now available

sliceomatic 6



Consequences of low muscle mass

Low muscle mass (sarcopenia) is highly prevalent in patients with cancer

E.g.

- Up to 66% of patients with head and neck cancer
- 47–69% of patients with pancreatic cancer

Low muscle mass or myosteatorsis can be present regardless of BMI or nutrition status

Shorter survival

HR 2.07 (95% CI 1.47, 2.92), $p < 0.001$
7 studies, head and neck cancer, $n = 1059$

Disease progression

HR 1.55 (95% CI 1.31, 1.84), $p < 0.001$
6 studies, pancreatic cancer $n = 1185$

Poor quality of life

SMD -0.27 (95% CI -0.40, -0.14), $p < 0.001$
7 studies, mixed tumour types, $n = 985$

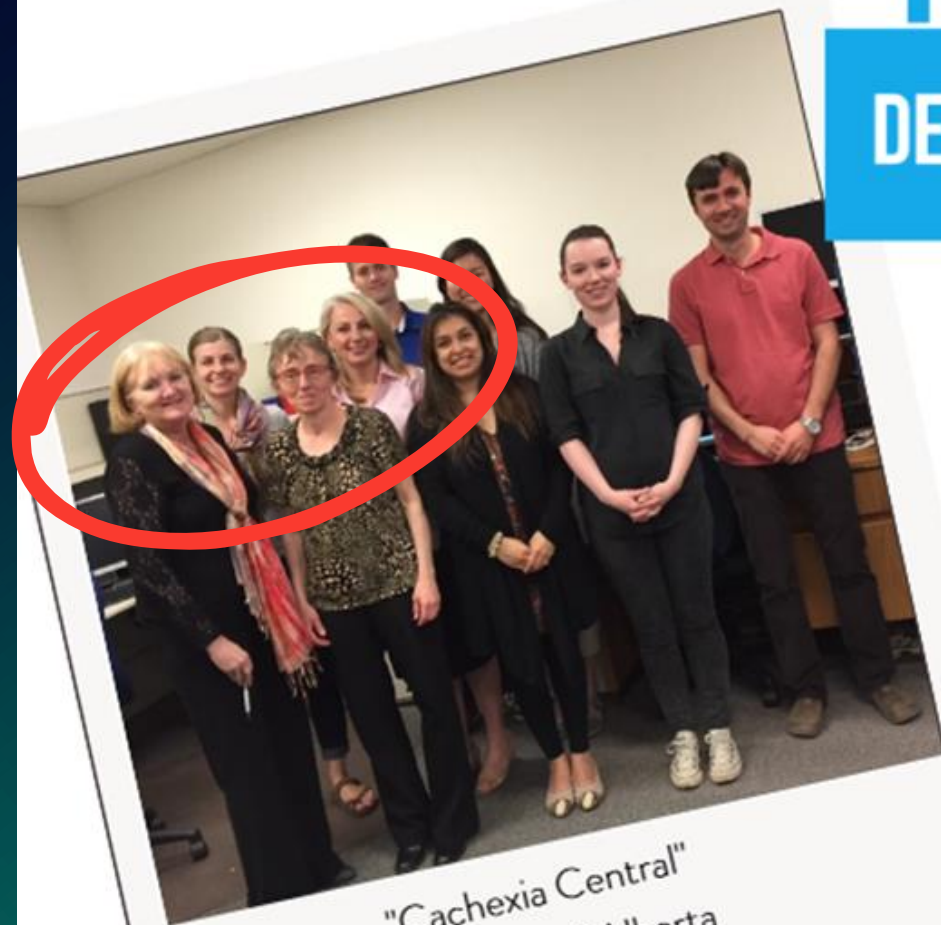
Dose-limiting chemotherapy toxicity

OR 2.19 (95% CI 1.78, 2.68), $p < 0.001$
48 studies, mixed tumour types, $n = 4803$



Figure: Prado et al. Clin Nutr 2022;41(10):2244–2263, shared via CC BY 4.07

DEPARTURE



"Cachexia Central"
University of Alberta
2015

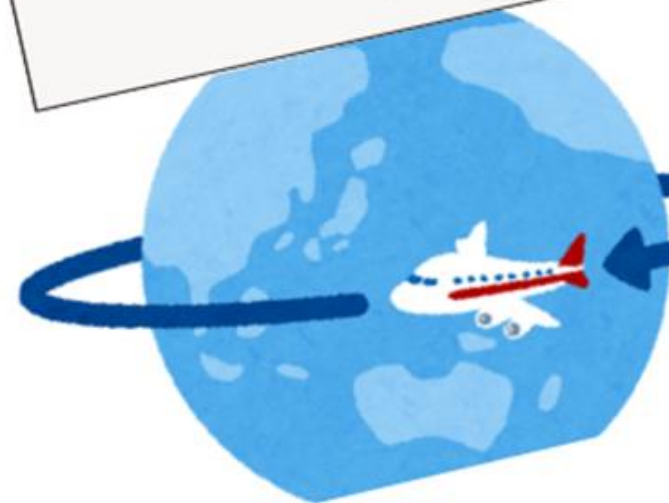


3 Day Education Workshops
Sydney 2018-19



Program

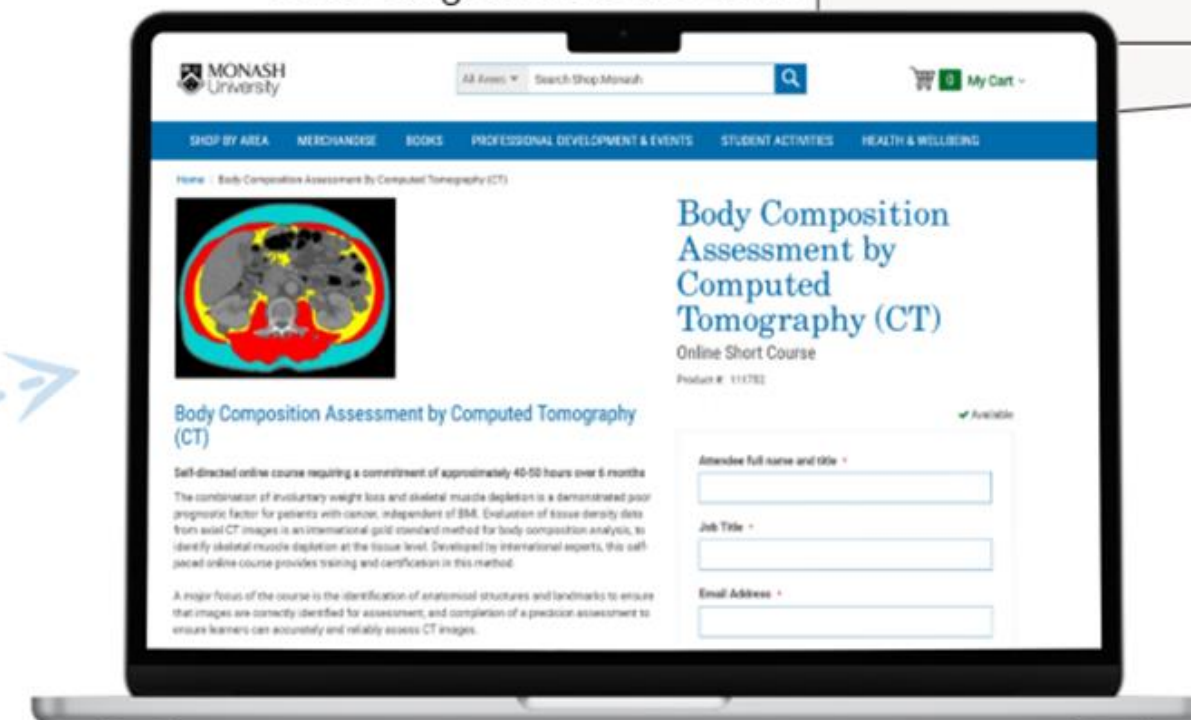
Evolution



Pandemic



Online Program Launched 2024





Body Composition Assessment by CT

Online training course



Prof. Vickie Baracos
University of Alberta



Prof. Judy Bauer
Monash University



Dr. Lisa Martin
University of Alberta



A/Clin. Prof. Merran Findlay
University of New South Wales



Abha Dunichand-Hoedl
University of Alberta



Dr. Lauren Hanna
Monash University



UNSW
SYDNEY



Key learning outcomes

Understanding anatomical structures and landmarks to enable identification of the third lumbar vertebra

Understanding the role of CT analysis for muscle mass and malnutrition assessment

Demonstrate precision through analysis of a series of images (both inter- and intra-observer reliability), which is acceptable for practical applications

Online education program modules

Course introduction



- Pre-course knowledge questionnaire

Module 1: Preparation



- Pre-readings
- Manual
- Knowledge check quiz

Module 2: Foundations



- Introduction to body composition by CT
- Landmarking
- Knowledge check quiz

Module 3: Applications to Research & Clinical Care



- Introduction to body composition analysis software
- How to use Sliceomatic and the Alberta Protocol
- Knowledge check quiz

Module 4: Participant practice



- Practice with images
- Compare results with images of an expert's analysis

Module 5: Precision Assessment



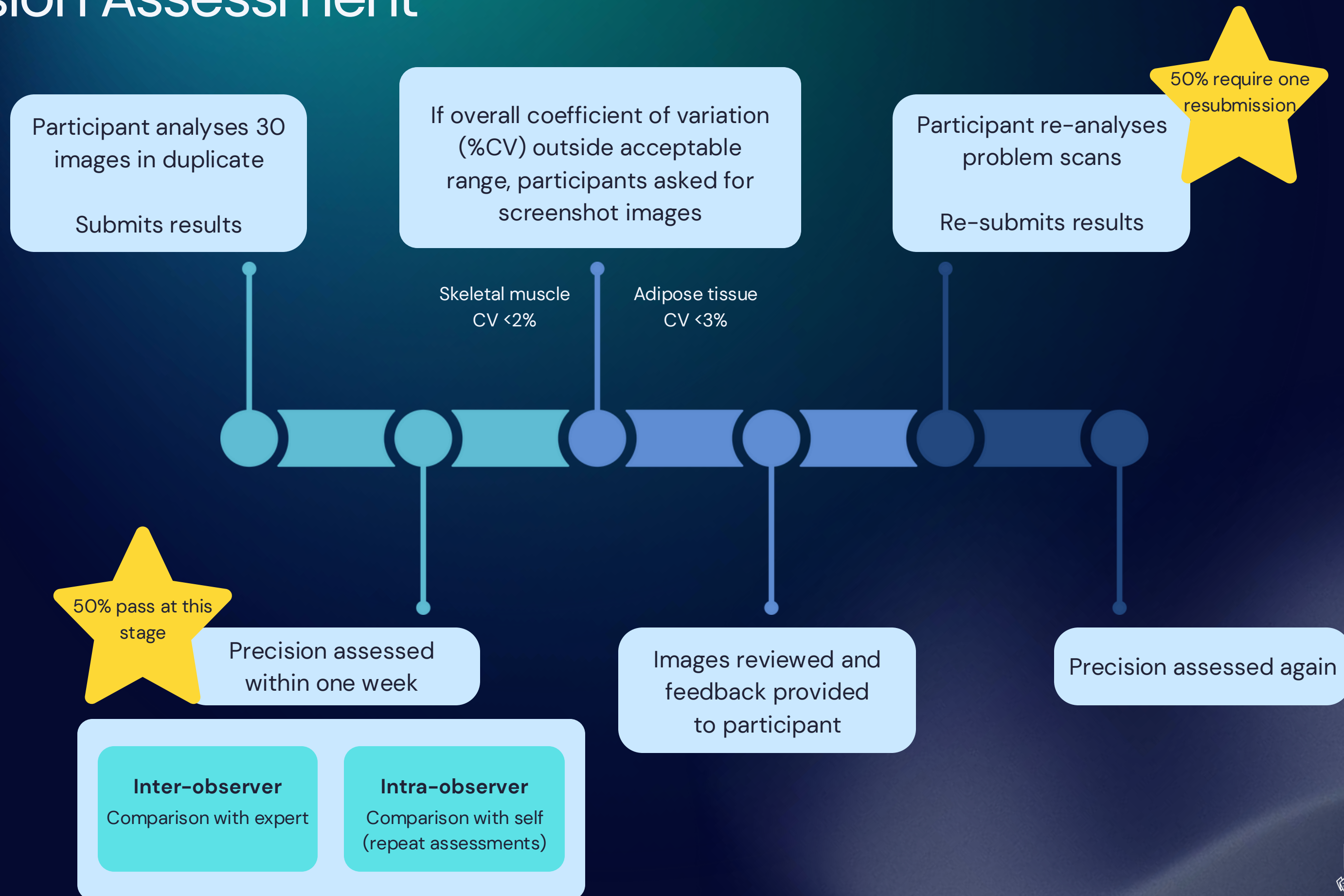
- Precision assessment
- Can submit first 5 images for preliminary feedback

Post-course evaluation



- Post-course evaluation questionnaire

Precision Assessment



Precision Assessment

Inter-observer precision %CV, mean (SD)	
Muscle	1.37 (0.26)
Visceral adipose tissue	1.40 (0.43)
Subcutaneous adipose tissue	1.39 (0.42)

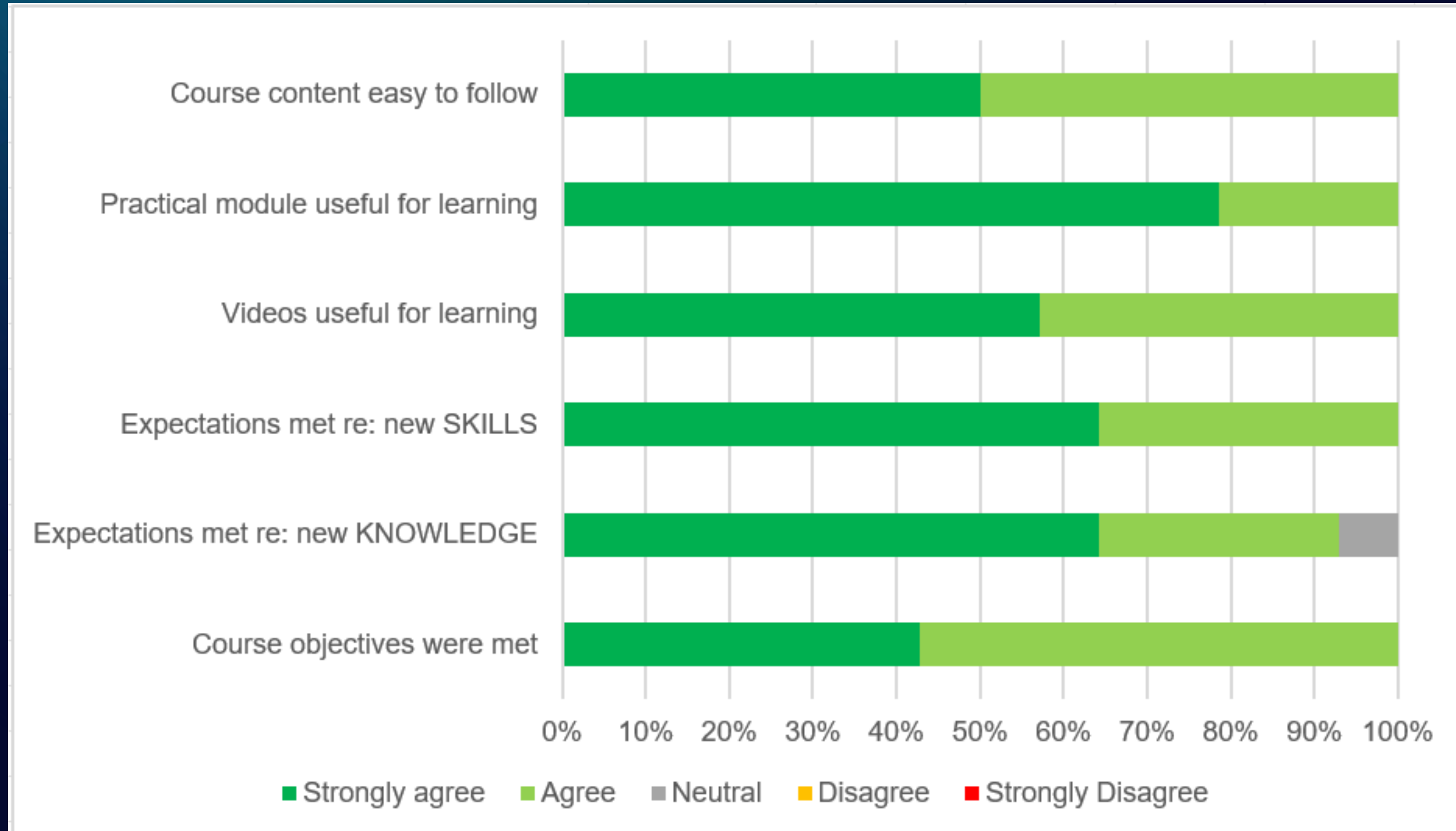
Building global workforce capability in body composition analysis



A range of
professions
trained:

- Dietetics
- Oncology
- Hepatology
- Surgeon
- Exercise
physiology
- Research

Course evaluation



Course evaluation

"It was helpful to be able to slowly work through the course in my own time"

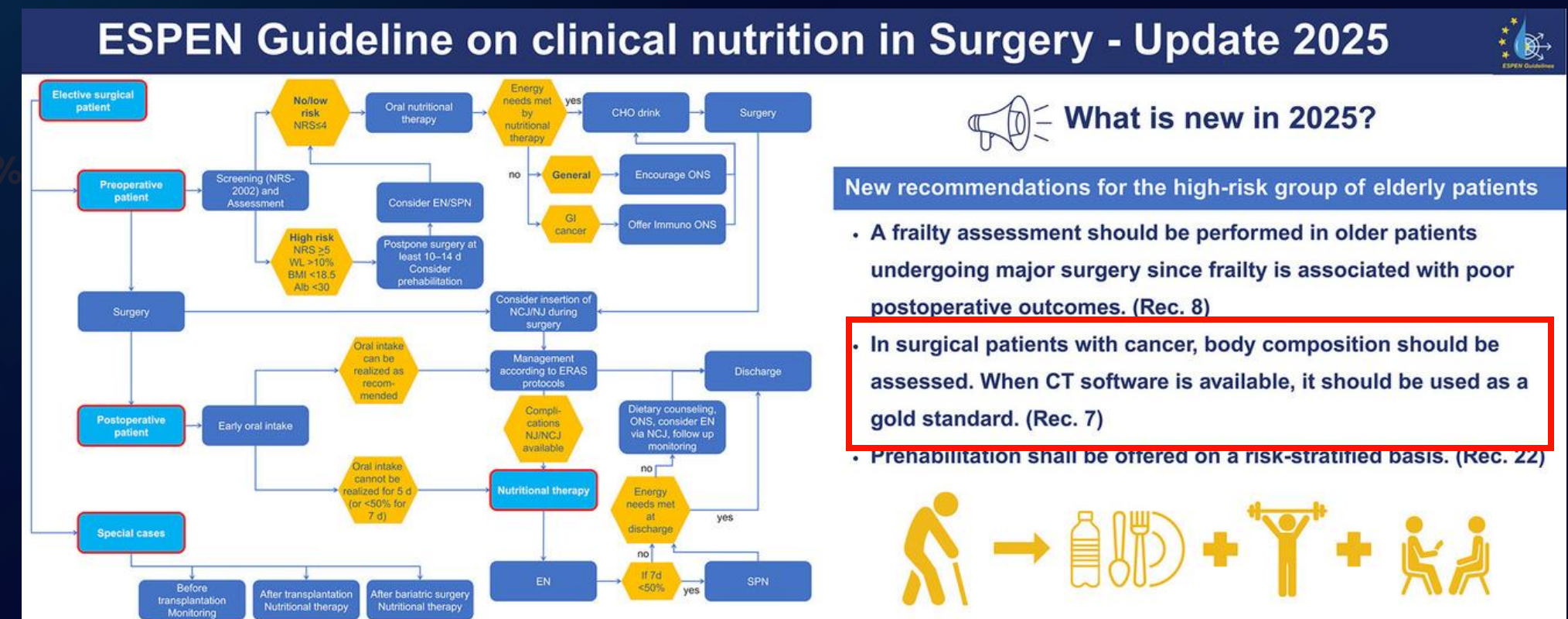
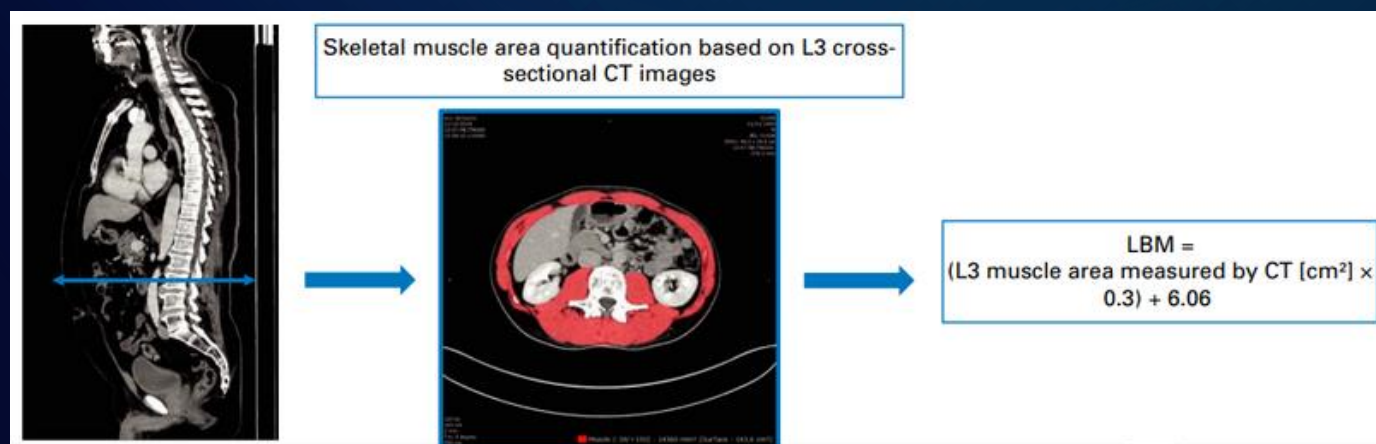
"There was plenty of opportunity to ask questions and receive feedback"

"Detailed video instructions of how to use the software were very helpful, and I liked the fact that we could go back and watch again"

"The videos were really helpful for me to understand the content and information"



CT – exciting new applications



Patients receiving LBM–dosed chemotherapy experienced less frequent grade ≥2 peripheral neurotoxicity, with longer time to onset

Survival time not adversely affected with LBM–dosed chemotherapy



Body Composition Assessment by CT

Online training
course

COURSE DETAILS

Register any time for this self-paced online course

Approx. 40-50 hours required to complete all modules and precision assessment

COST

\$1320 AUD (inc. GST)

REQUIRED RESOURCES

Access to TomoVision 'sliceOmatic' software (temporary evaluation licenses available)

Desktop or laptop computer, reliable internet connection.



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lauren.hanna@monash.edu