

# **EFEITO DA SUPLEMENTAÇÃO PROTEICA ASSOCIADO AO EXERCÍCIO RESISTIDO SOBRE O CONTROLE GLICÊMICO, PRODUTO DE GLICAÇÃO AVANÇADA, EQUILÍBRIO POSTURAL E FORÇA MUSCULAR EM IDOSOS VIVENDO DE DIABETES MELLITUS TIPO 2: ENSAIO CLÍNICO RANDOMIZADO E TRIPLO CEGO.**

**Angela Castilho Alonso – Docente do Programa Ciências do Envelhecimento da Universidade São Judas Tadeu -SP**

**Adriana Machado Lima - Docente do Programa Ciências do Envelhecimento da Universidade São Judas Tadeu -SP**

**Marta Ferreira Bastos - Docente do Programa Ciências do Envelhecimento da Universidade São Judas Tadeu -SP**

**Rita de Cássia Ernandes – Mestre pelo Programa Ciências do Envelhecimento da Universidade São Judas Tadeu -SP**

**Júlia Maria D'Andréa Greve – Prof. Dra Coordenadora do LEM- FMUSP**

**Guilherme Carlos Brech - Docente do Programa Ciências do Envelhecimento da Universidade São Judas Tadeu -SP**

**Contatos: [angelica.Alonso@saojudas.br](mailto:angelica.Alonso@saojudas.br); [adriana.lima@saojudas.br](mailto:adriana.lima@saojudas.br); [marta.bastos@saojudas.br](mailto:marta.bastos@saojudas.br);  
[rita.ernandes19@gmail.com](mailto:rita.ernandes19@gmail.com); [jgreve@usp.br](mailto:jgreve@usp.br); [guilherme.brech@saojudas.br](mailto:guilherme.brech@saojudas.br)**

# Introdução

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ORIGINAL ARTICLE

WILEY

**Effects of whey protein plus vitamin D supplementation combined with progressive resistance training on glycaemic control, body composition, muscle function and cardiometabolic risk factors in middle-aged and older overweight/obese adults with type 2 diabetes: A 24-week randomized controlled trial**

Eliza G. Miller PhD<sup>1</sup> | Caryl A. Nowson PhD<sup>1</sup> | David W. Dunstan PhD<sup>2,3</sup> |  
Deborah A. Kerr PhD<sup>4</sup> | David Menzies Post Grad Dip Ex Rehab<sup>5</sup> |  
Robin M. Daly PhD<sup>1</sup> 



International Journal of  
*Environmental Research  
and Public Health*



Article

## **The Influence of Whey Protein on Muscle Strength, Glycemic Control and Functional Tasks in Older Adults with Type 2 Diabetes Mellitus in a Resistance Exercise Program: Randomized and Triple Blind Clinical Trial**

André Luiz de Seixas Soares<sup>1,2</sup>, Adriana Machado-Lima<sup>1,3</sup>, Guilherme Carlos Brech<sup>1,3,8</sup>,  
Júlia Maria D'Andréa Greve<sup>3</sup>, Joselma Rodrigues dos Santos<sup>3</sup>, Thiago Resende Inojosa<sup>3</sup>,  
Marcelo Macedo Rogero<sup>4</sup>, João Eduardo Nunes Salles<sup>5</sup>, José Maria Santarem-Sobrinho<sup>6</sup>,  
Catherine L. Davis<sup>2</sup> and Angelica Castilho Alonso<sup>1,3</sup>



## **Nil Whey Protein Effect on Glycemic Control after Intense Mixed-Mode Training in Type 2 Diabetes**

KIM ALEXANDER GAFFNEY<sup>1</sup>, ADAM LUCERO<sup>1</sup>, LEE STONER<sup>2</sup>, JAMES FAULKNER<sup>3</sup>, PATRICIA WHITFIELD<sup>4,5</sup>,  
JEREMY KREBS<sup>4,5</sup>, and DAVID STEPHEN ROWLANDS<sup>1</sup>

<sup>1</sup>School of Sport, Exercise, and Nutrition, Massey University Wellington, Wellington, NEW ZEALAND; <sup>2</sup>Department of Exercise and Sport Science, University of North Carolina at Chapel Hill, Chapel Hill, NC; <sup>3</sup>Department of Sport and Exercise, University of Winchester, Winchester, UNITED KINGDOM; <sup>4</sup>Centre for Endocrine, Diabetes and Obesity Research, Wellington Regional Hospital, Wellington, NEW ZEALAND; and <sup>5</sup>Department of Medicine, University of Otago, Wellington, Wellington, NEW ZEALAND

CLINICAL SCIENCES





## JUSTIFICATIVA

**POUCOS ESTUDOS**  
**EFEITO DA PROTEINA NO NÃO DIABÉTICO**  
**EFEITO DO CARBOIDRATO NO DIABÉTICO**



**Avaliar o efeito da suplementação proteica associado ao exercício resistido sobre o controle glicêmico, formação dos produtos de glicação avançada (AGE), equilíbrio postural, a força muscular em idosos vivendo com Diabetes Mellitus Tipo 2**

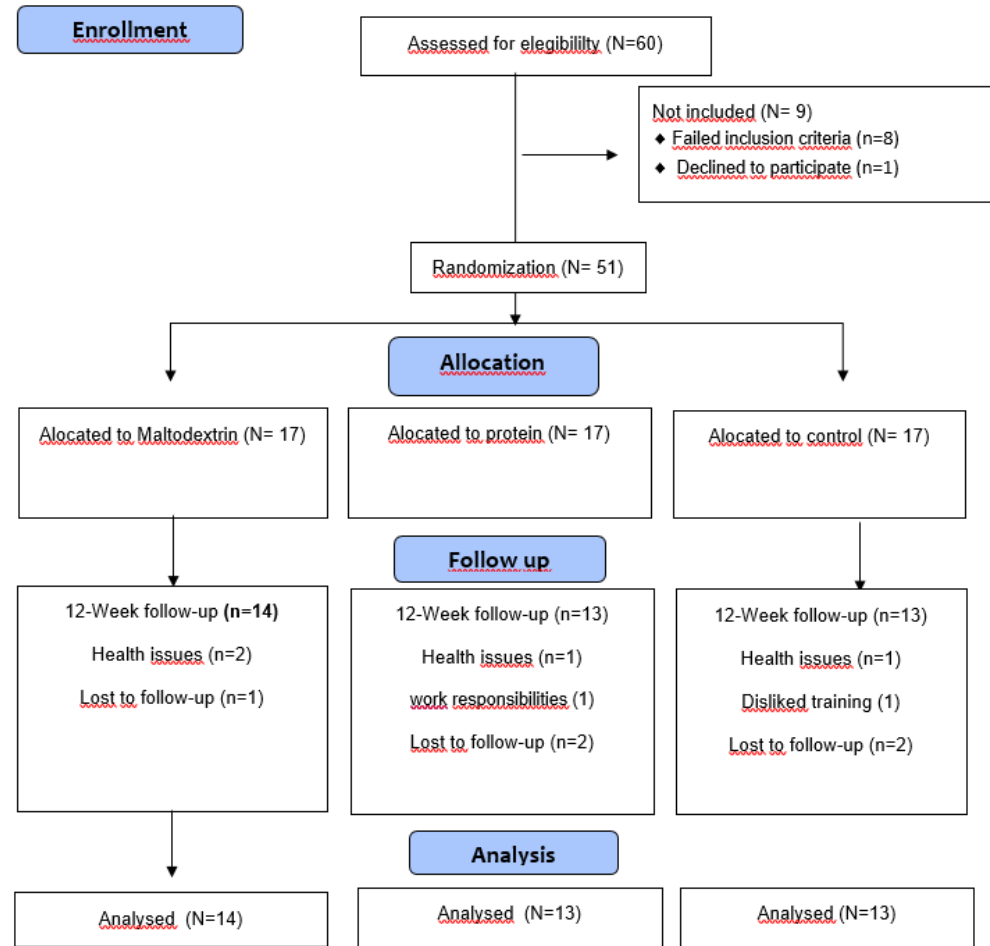
# Ensaio clínico Triplo cego

- ✓ Paciente
- ✓ Professores
- ✓ Avaliação

Cep nº  
39202214.8.0000.0065.

CAAE:

Registro no Trials (ClinicalTrials.gov  
Identifier: NCT03792646).



# Avaliação



Avaliação  
clínica

Dados  
demográficos  
e da doença

FPP

Avaliação  
isocinética

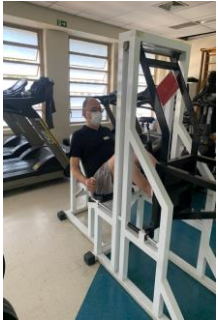
Equilíbrio  
MiniBest

AGE

Analises bioquímica



# Treinamento



# Suplementação



2x por  
semana, pós  
treino

Proteína do soro do leite  
Carboidrato – Maltodextrina  
Placebo – água saborizada

# Força Muscular

## PRÉ E PÓS



### AVALIAÇÃO ISOCINÉTICA

**Extensores Dominante - PT**

**Flexores D e ND - Todos os grupos**



SEM ≠ FPP

## MINIBEST

Anticipatory adjustments								
Protein	4.3(0.8) <sup>a</sup>	5.2(0.7) <sup>a</sup>	17.04	P<0.001*	0.01	0.98	5.11	0.01*
Maltodextrin	4.5(0.9) <sup>a</sup>	5.0(0.8) <sup>a</sup>						
Control	4.8(1.0)	4.8(0.9)						
Postural responses								
Protein	5.4(0.7) <sup>a</sup>	5.5(0.8) <sup>a</sup>	7.41	0.009*	0.37	0.68	1.71	0.19
Maltodextrin	4.7(1.9)	5.7(0.4)						
Control	4.7(1.4)	5.4(1.6)						
Sensory orientation								
Protein	5.6(0.7)	6.0(0.0)	0.00	1.00	1.01	0.37	1,24	0.29
Maltodextrin	5.1(1.1)	6.0(0.0)						
Control	5.5(0.9)	5.8(0.5)						
Gait stability								
Protein	9.2(1.0)	7.9(3.6) <sup>a,b,c</sup>	0.44	P<0.001*	0.99	P<0.001*	2.86	P<0.001*
Maltodextrin	9.1(0.8)	8.9(2.7) <sup>c,d</sup>						
Control	9.0(0.8)	9.6(0.6) <sup>b,d</sup>						
Minibest Total								
Protein	24.7(1.9) <sup>a</sup>	26,5(1.4) <sup>a</sup>	33.89	P<0.001*	0.54	0.58	1.89	0.17
Maltodextrin	23.5(3.1) <sup>a</sup>	26.7(1.2) <sup>a</sup>						
Control	24.1(2.6) <sup>a</sup>	25.7(2.1) <sup>a</sup>						

PRÉ E PÓS



ENTRE OS GRUPOS



# PRÉ E PÓS

Parameters	Pre (sd)	Post(sd)						
			Time effect		Group effect		Group*time effect	
			F	p	F	p	F	p
<b>Frutosamine</b>								
Protein	299.7(51.3)	268.3(37.2)	1.57	0.21	0.71	0.46	1.02	0.37
Maltodextrin	289.6(54.9)	289.5(54.9)						
Control	299.4(60.50)	305.5(45.0)						
<b>Glucose</b>								
Protein	138.8(38.2)	116.3(27.5)	0.00	0.96	3.01	0.06	2.67	0.08
Maltodextrin	111.9(22.4)	115.2(28.1)						
Control	132.8(39.2)	147.5(46.8)						
<b>Insulin</b>								
Protein	18.0(12.1) <sup>a</sup>	12.8(7.6) <sup>a</sup>	5.58	0.02*	1.87	0.16	1.24	0.30
Maltodextrin	17.0(15.1) <sup>a</sup>	11.5(5.7) <sup>a</sup>						
Control	9.1(4.1)	9.6(4.8)						
<b>HOMA IR</b>								
Protein	6.3(4.4) <sup>a</sup>	3.6(2.0) <sup>a</sup>	5.07	0.03*	1.33	0.27	2.18	0.12
Maltodextrin	4.9(5.6)	3.2(1.7)						
Control	3.1(1.7)	3.4(2.1)						
<b>Glycated Hemoglobin</b>								
Protein	7.1(1.2)	6.6(0.8)	1.07	0.30	1.99	0.14	0.77	0.46
Maltodextrin	6.6(0.9)	6.6(0.8)						
Control	7.4(1.0)	7.2(0.8)						
<b>AGE</b>								
Protein	3.4(0.9)	3.3(1.9)	0.47	0.49	0.46	0.63	0.45	0.64
Maltodextrin	2.9(0.5)	3.0(0.5)						
Control	3.0(0.6)	2.9(1.0)						

# Conclusão



O consumo de PT em idosos vivendo com DM2 não aumentou o efeito do TR nas medidas de força muscular, equilíbrio postural, AGE, porém diminui a resistência à insulina

# Referências

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