

1º SIMPÓSIO MINEIRO DE
FUTEBOL DE BASE
— INICIAÇÃO ESPORTIVA —
PROGRAMAÇÃO



Ciências de Dados é uma realidade muito distante da prática?

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Universidade Federal de Minas Gerais - UFMG

Sumário



- Tomada de Decisão (TD)
- Papel da Informação
- Contribuição indireta na TD
- Contribuição direta TD
- Resumo

TOMADA DE DECISÃO

- O profissional de Educação Física precisa tomar decisões sobre quais métodos ou procedimentos adotar no planejamento e na intervenção.
- Normalmente essas decisões baseiam-se em princípios pedagógicos, fisiológicos e psicológicos associados ao raciocínio, conhecimento adquirido, à observação pessoal e à intuição.

(Pereira et al. 2020)

TOMADA DE DECISÃO

- Entretanto qual o papel da informação na tomada de decisão?

Put your money where my mouth is: Knowing kickers' preferences enhances anticipation of football goalkeepers

Cristiano Murta^a, Maicon Rodrigues Albuquerque^a, Pablo Juan Greco^a,

Markus Raab^{b,c}, and Gibson Moreira Praça^{a*}

Murta et al. (Submitted)

- 20 Goleiros do Sub-20
 - 20 Goleiros (novatos)
- Pareados por idade.

38 cenas

2 Familiarização

36 Teste

12 sem informação prévia

24 com informações prévias

12 congruentes

12 incongruentes

Aleatório.

Put your money where my mouth is: Knowing kickers' preferences

enhances anticipation of football goalkeepers

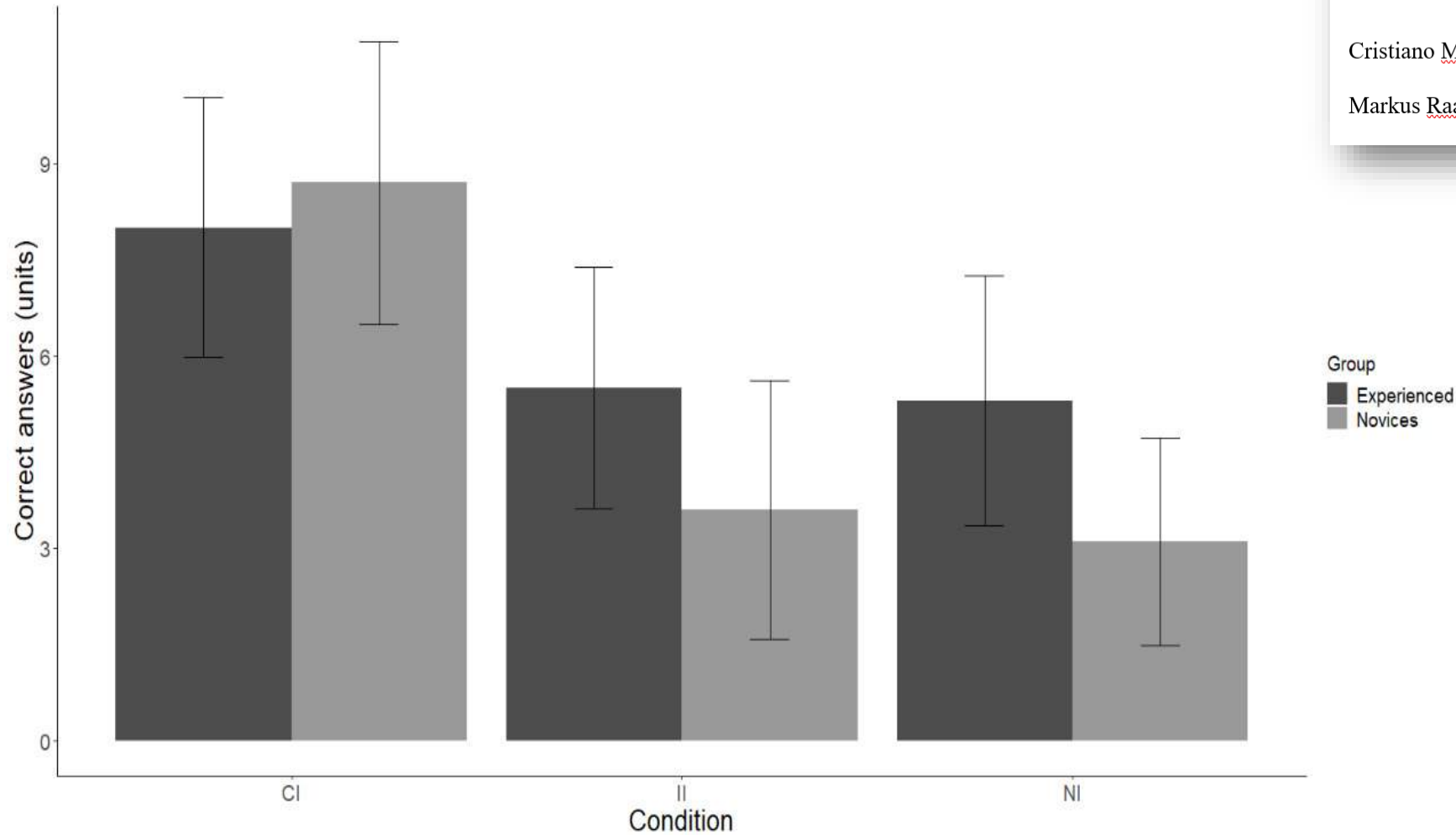
Cristiano [Murta^a](#), Maicon Rodrigues [Albuquerque^a](#), Pablo Juan [Greco^a](#),

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Note. CI: congruent information; II: incongruent information; NI: no information.

Murta et al. (Submitted)

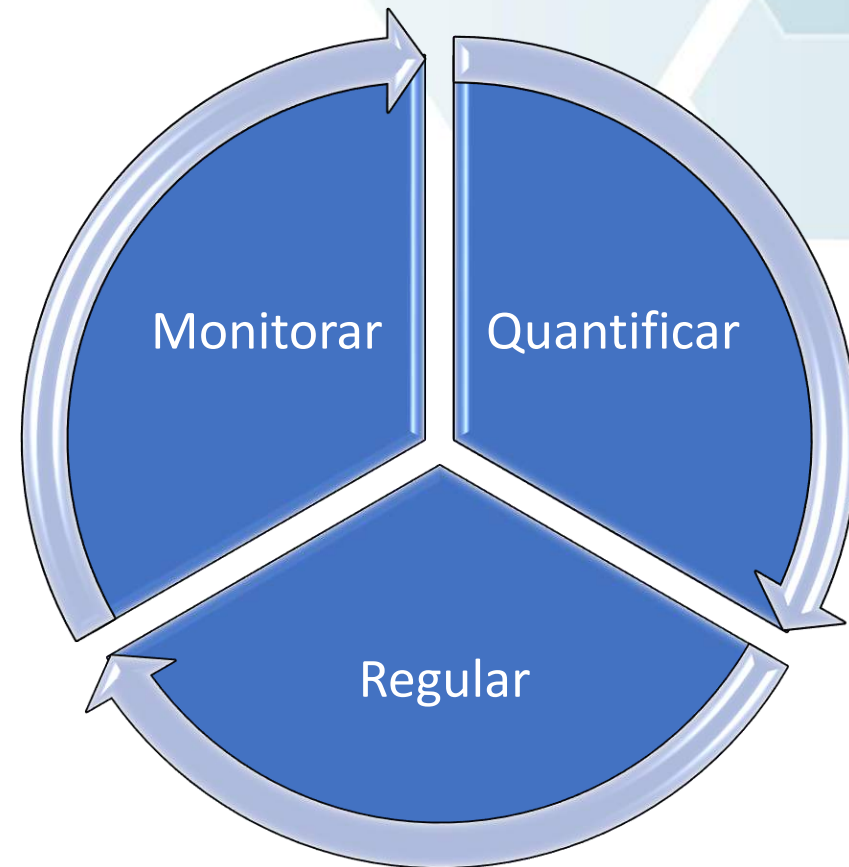
RESUMO...

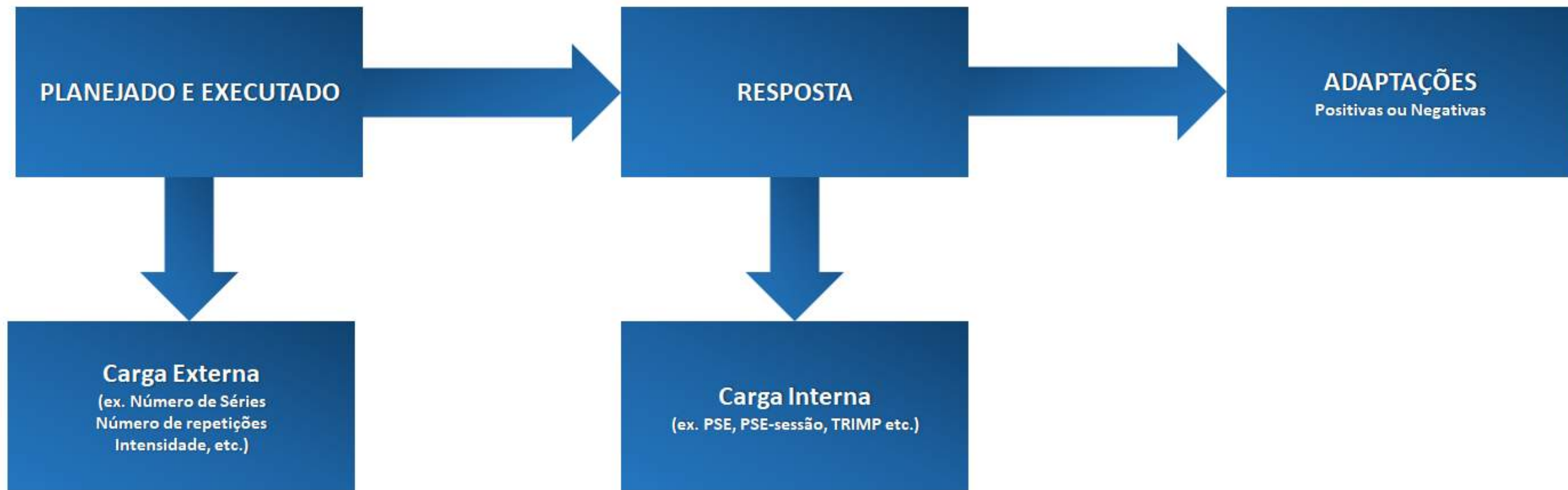
Profissionais envolvidos devem submeter os atletas a treinamentos exigentes impondo cargas elevadas e cada vez mais próximas dos limites toleráveis (SZMUCHROWSKI; COUTO, 2012).

Mesmo quando os atletas são submetidos a **cargas individualizadas**, as respostas a estas cargas são **imprevisíveis** (SZMUCHROWSKI; COUTO, 2012).

Planejamento dos treinos, sem o acompanhamento das adaptações decorrentes dos treinos, **não é suficiente** para garantir uma **melhora** do desempenho (IMPELLIZZERI; MARCORA; COUTTS, 2019).

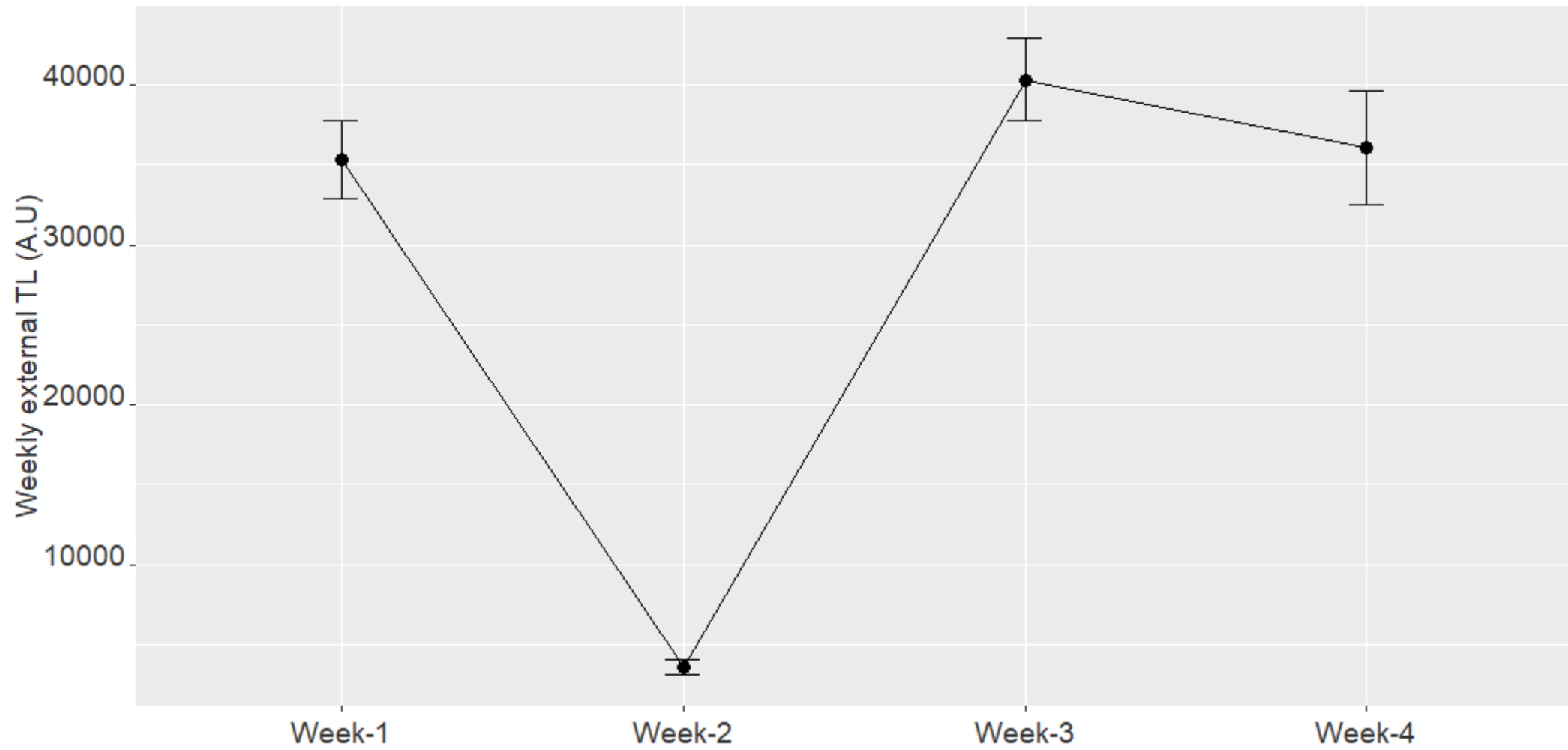
A **carga de treinamento** pode ser descrita como externa ou interna, dependendo se os aspectos mensuráveis ocorrem interna ou externamente ao atleta (IMPELLIZZERI; MARCORA; COUTTS, 2019)



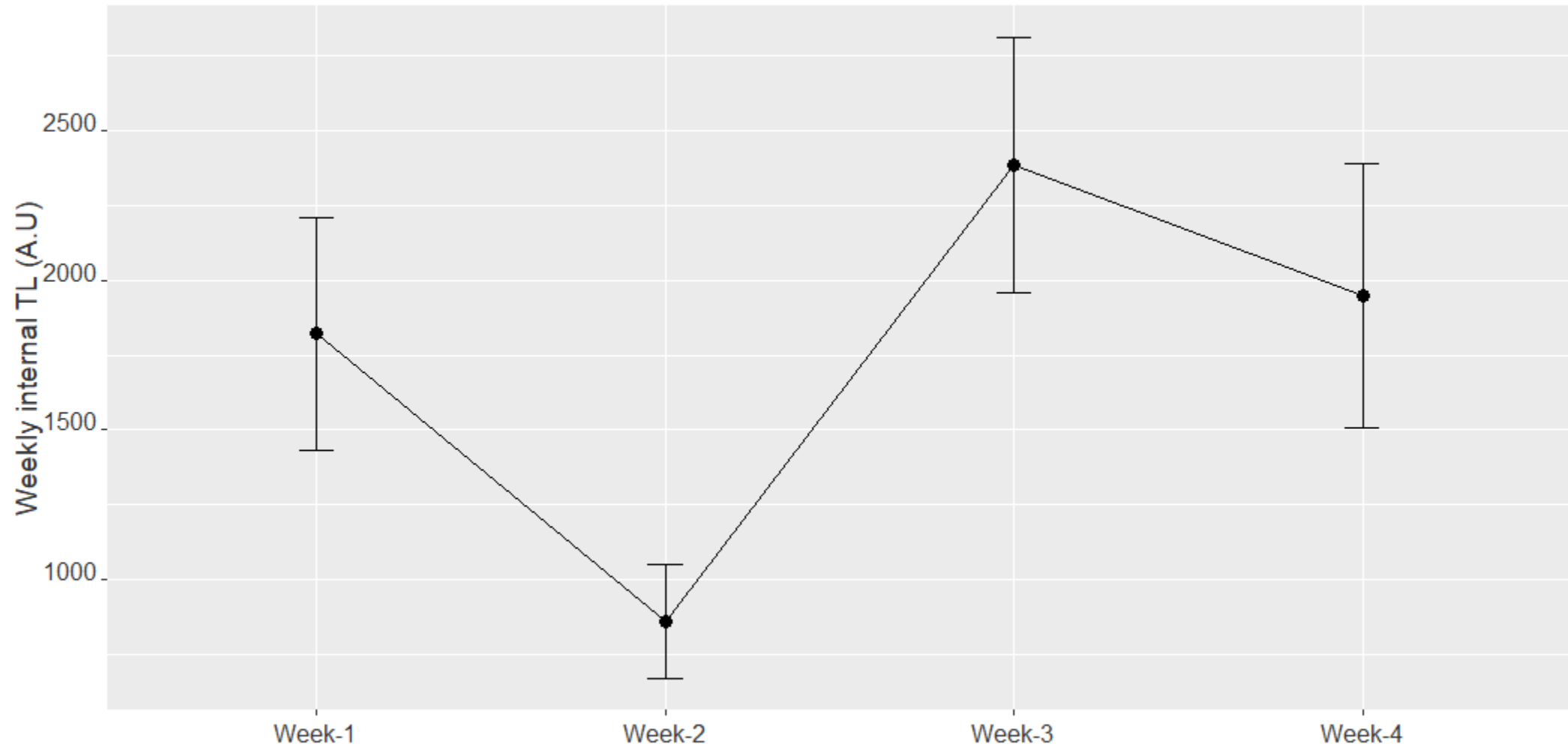


(Adaptado de Nakamura, 2020)

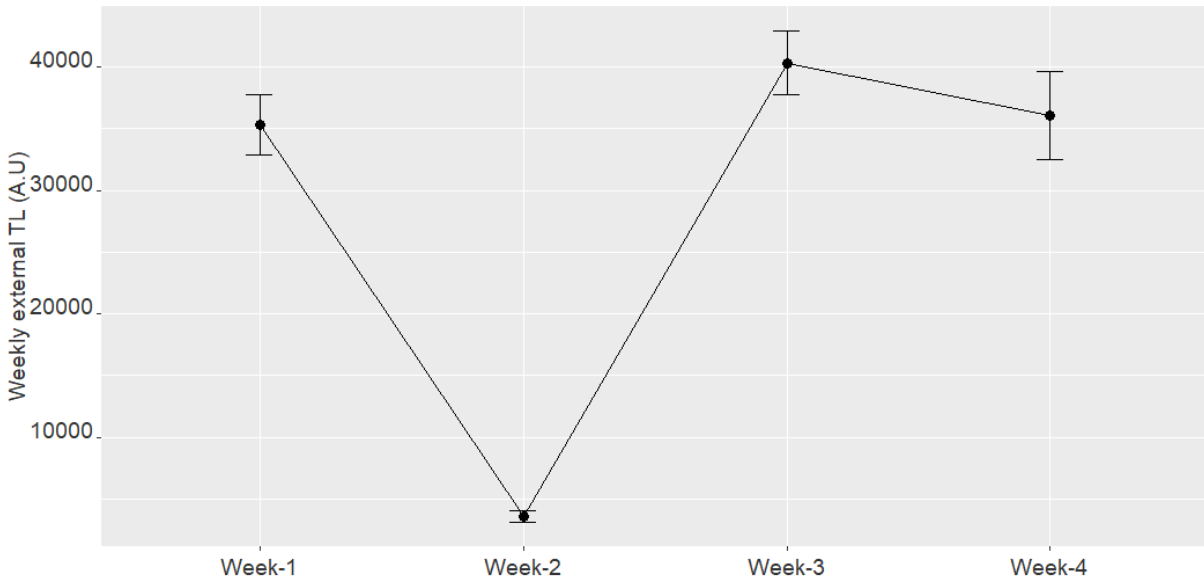
Friedman's ANOVA [$\chi^2(3) = 19.00, p > .001$]



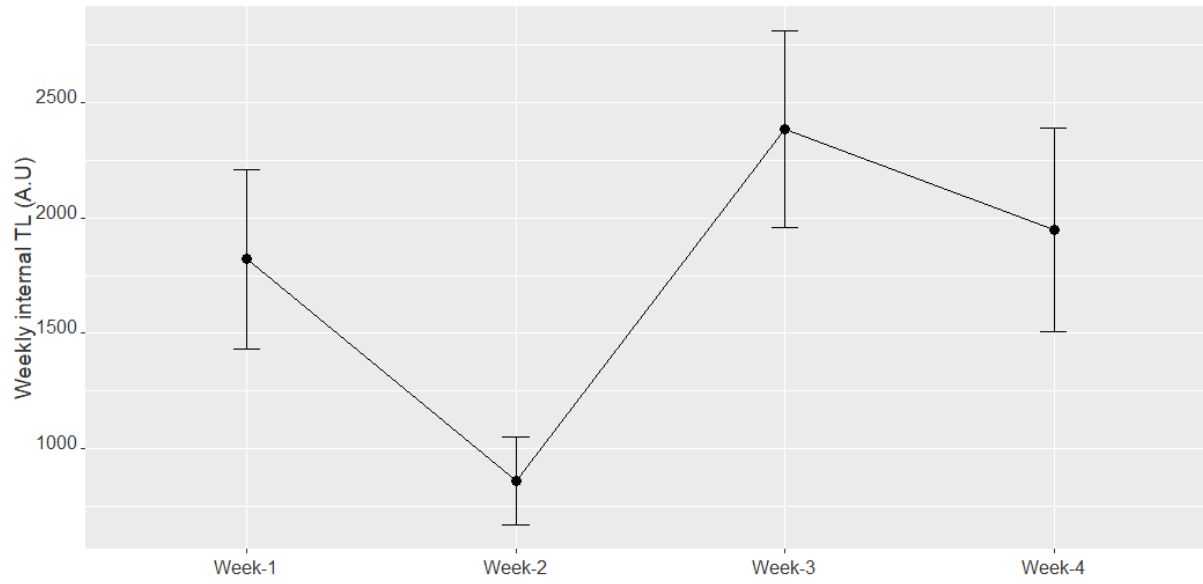
Friedman's ANOVA [$\chi^2(3) = 16.73, p > .001$]

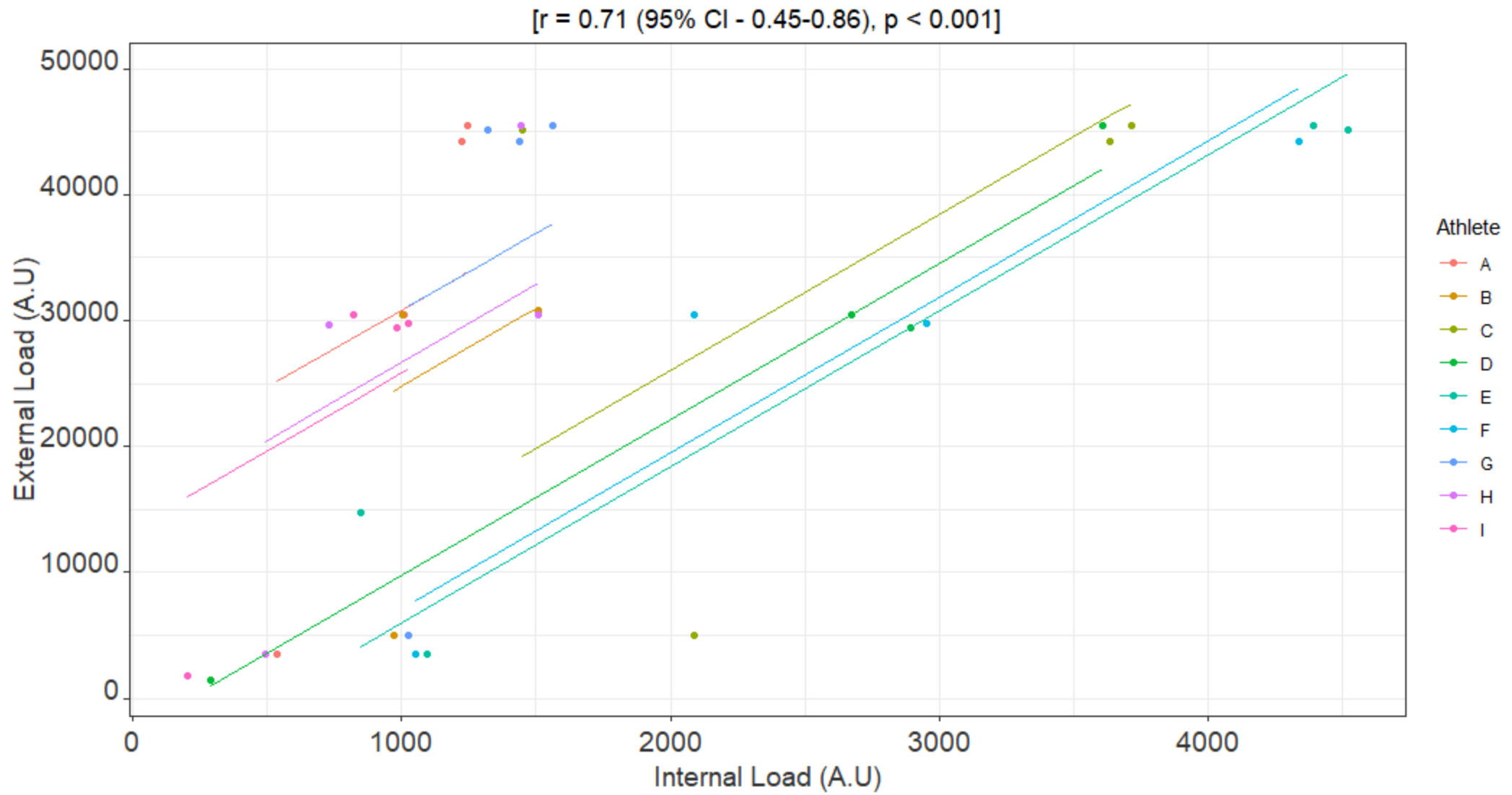


Friedman's ANOVA [$\chi^2(3) = 19.00, p > .001$]








Friedman's ANOVA [$\chi^2(3) = 16.73, p > .001$]





Scatter plot illustrating repeated measures correlations between the weekly internal training load and weekly external training load.

Can motivation and overtraining predict burnout in professional soccer athletes in different periods of the season?

Leonardo Henrique Silva Fagundes ^a, Franco Noce ^a, Maicon Rodrigues Albuquerque ^{ab},
André Gustavo Pereira de Andrade ^c and Varley Teoldo da Costa ^{a*}

^a*Psychology of Sport Laboratory, Department of Sports Science, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil;* ^b*Study and Research in Combat Sports Laboratory, Department of Sports Science, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil;* ^c*Biomechanics Laboratory, Department of Sports Science, Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil*

(Received 1 November 2018; accepted 17 July 2019)

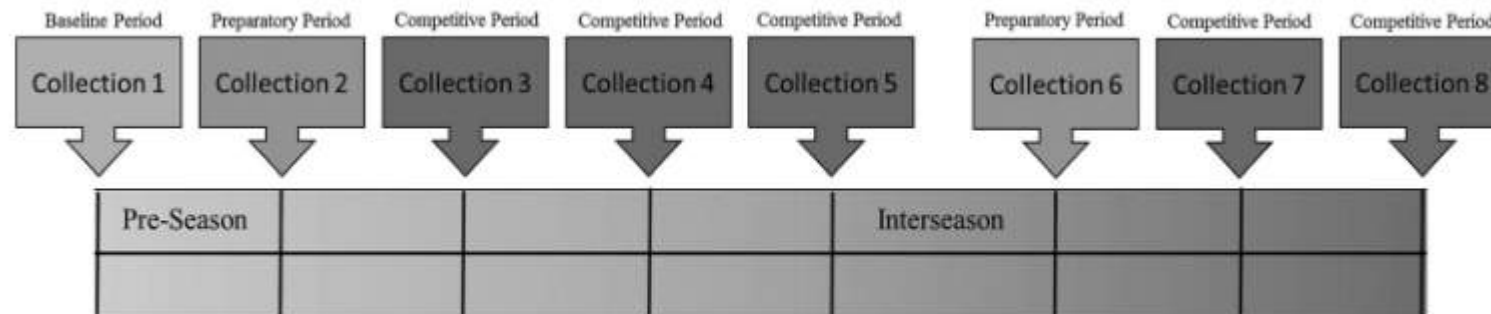







Figure 1. Flowchart of data collection over the season.

Can motivation and overtraining predict burnout in professional soccer athletes in different periods of the season?

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Table 3. Sequential multiple regression of motivation and overtraining on burnout for soccer athletes.

Model	Step	Predictor	beta (<i>p</i>)	beta (95% CI)	beta_ <i>standardised</i>	Adjusted <i>R</i> ²	SEE
Model 1 (Baseline to Preparatory)							
Total burnout	1	AM	0.24 (0.001)*	(0.1–0.36)	.588	0.32	0.25
EPE	1	AM	0.41 (0.001)*	(0.22–0.60)	.629	0.38	0.39
Model 2 (Baseline to Competitive)							
Total burnout	1	AM	0.40 (0.001)*	(0.20–0.60)	.610	0.35	0.40
EPE	1	AM	0.25 (0.002)*	(0.09–0.40)	.517	0.24	0.32
Model 3 (Preparatory to Competitive)							
Total burnout	1	AM	0.29 (0.001)*	(0.19–0.40)	.551	0.54	0.35
	2	SSS	0.37 (0.001)*	(0.20–0.53)	.473	0.72	0.27
EPE	1	AM	0.22 (0.001)*	(0.15–0.30)	.538	0.56	0.24
	2	SSS	0.25 (0.001)*	(0.13–0.37)	.439	0.73	0.19

Note: beta = unstandardised coefficient; *p* = *p* value; beta_ *standardised* = *standardised coefficients*; Adjusted *R*² = adjusted *R* squared; SEE = standardised error of the estimate; CI = 95% confidence interval of beta value; EPE = emotional and physical exhaustion; AM = amotivation; and SSS = sport-specific stress. **p* < 0.05.

TOMADA DE DECISÃO

- Quanto mais informação de qualidade eu tenho...
- Maior probabilidade de tomar boas decisões!
- Contribuição indireta para TD – Fornecer informação às pessoas que tomam decisões.



Facilidades

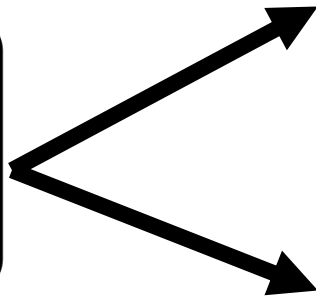
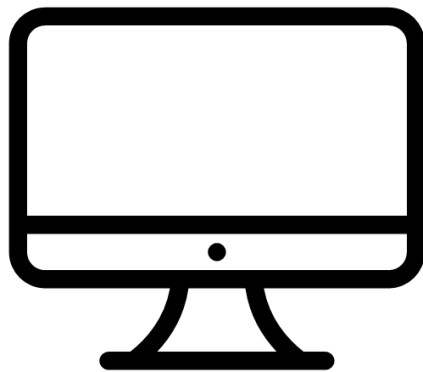
- Desenvolvimento da Ciências no Últimos ANOS;
- Tecnologia de disponível (hardware e software);
- Grande disponibilidade de livros/cursos/etc.

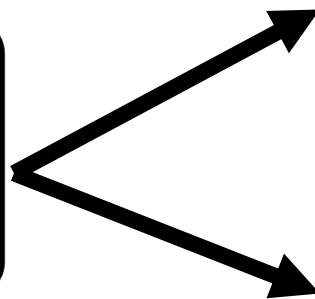
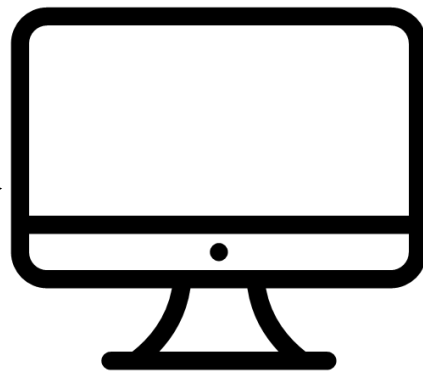
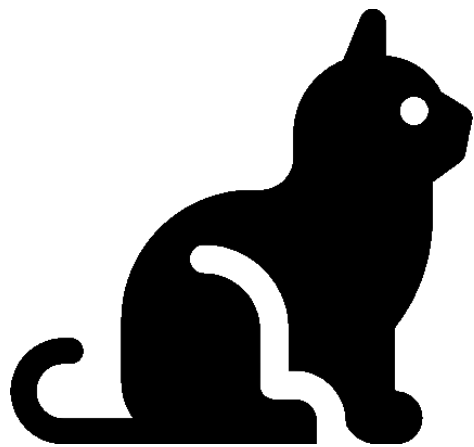
Dificuldades

- Grande quantidade de informação gerada;
- Conhecimento de Programação;
- Conhecimento em Estatística;
- Idioma.

TOMADA DE DECISÃO “direta”











Article

Predicting Wins, Losses and Attributes' Sensitivities in the Soccer World Cup 2018 Using Neural Network Analysis

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75 attributes presented

Those match attributes were from the physical indicators (distances covered, speed and sprints ... etc.) and technical indicators (number of passes, passes received, pass success, fouls, shots ... etc.)

72.7% - 83.3%

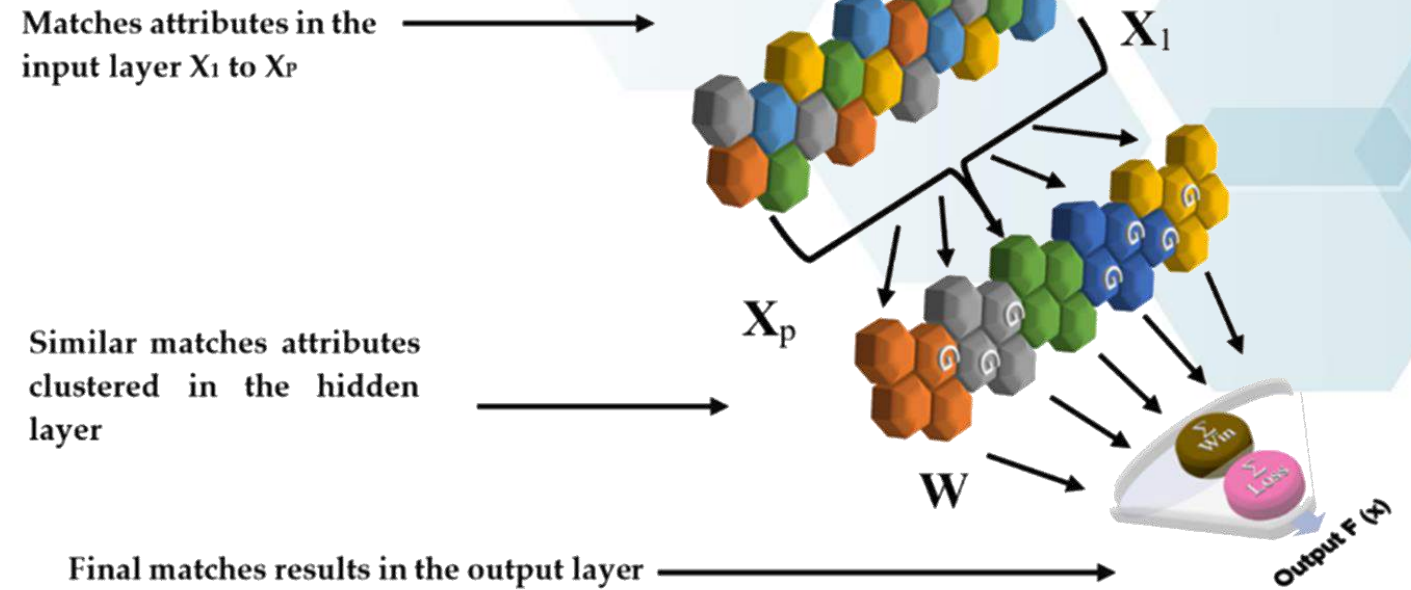


Figure 1. Radial Basis Function (RBF) network. G is Gaussian function, W is weights.

Original article.

Title of the article: Ranking position and nationality of competitors can predict Taekwondo winners in the high-level competition: An analysis of the 2019 World Taekwondo Championship

Preferred running head: Ranking and nationality predict TKD winners and losers

Full names of the authors and institutional/corporate affiliations:

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MESQUITA^{2(ADE)}, Tomas HERRERA-VALENZUELA^{3,4(ADE)}, Daniele
DETANICO^{5(ADE)}, Emerson FRANCHINI^{6(ADE)}

- Ranking
- Pais de Origem



Information Collection



Combine the extracted ranking data and the country tradition index



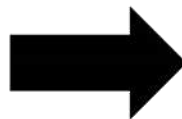
Data normalization 0 to 1



Final dataset



Final dataset



Differences Between Winners and Losers

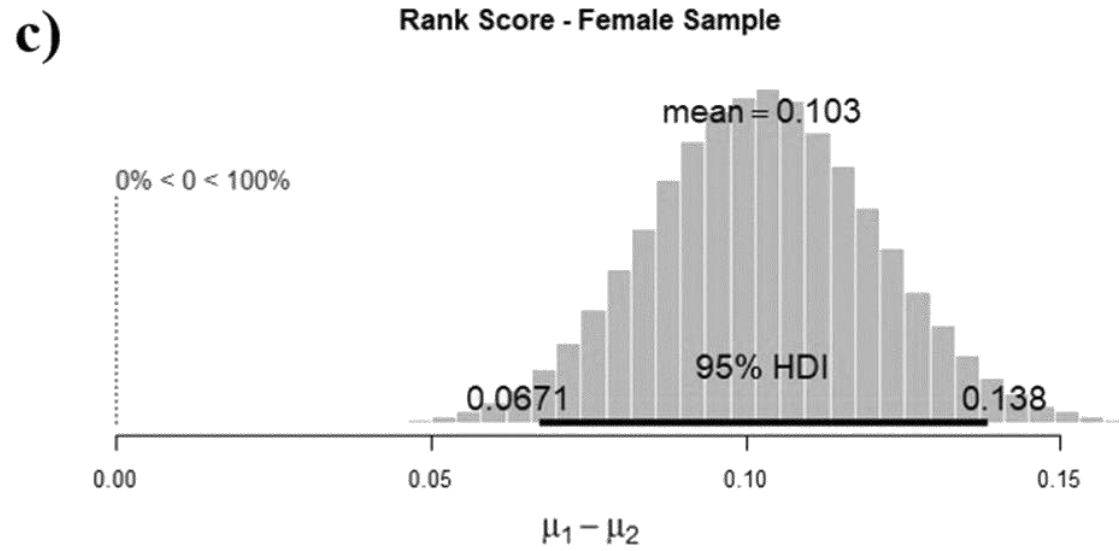
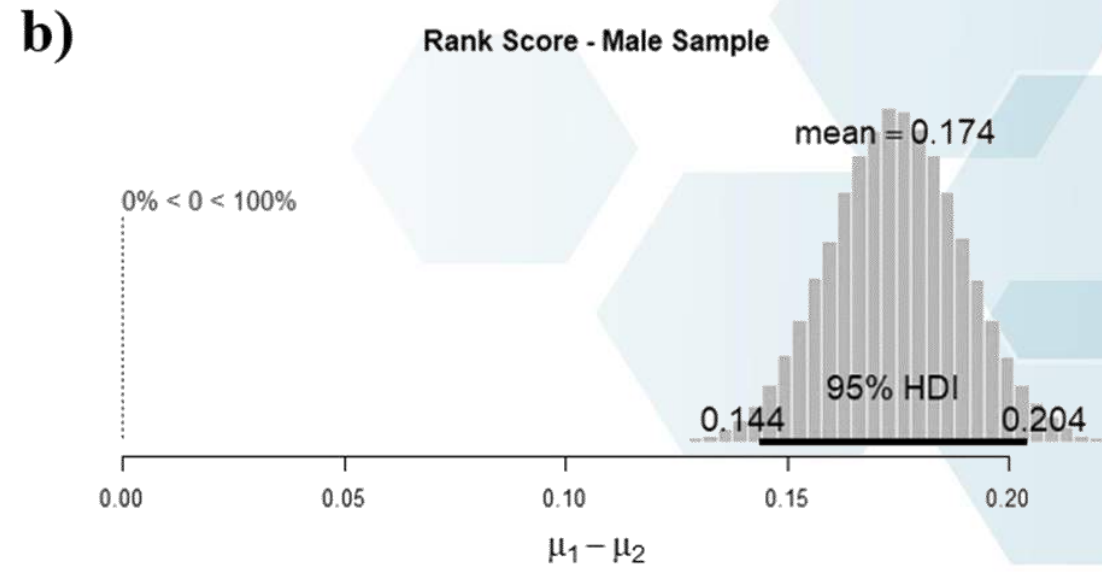
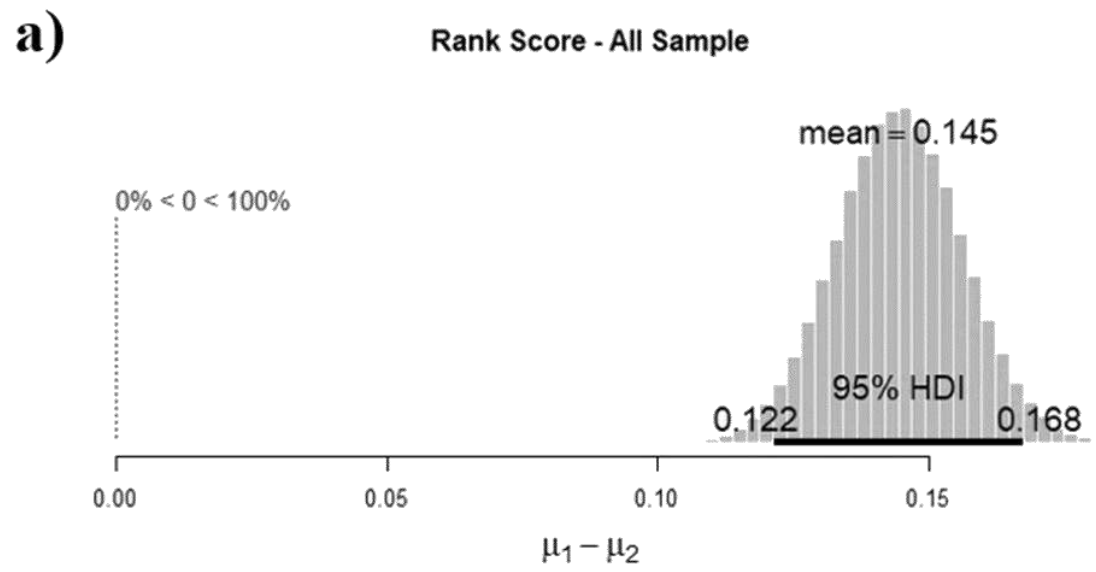


Figure 2: Bayesian estimation to compare the rank scores between winners and losers in the whole sample, male, and female groups.

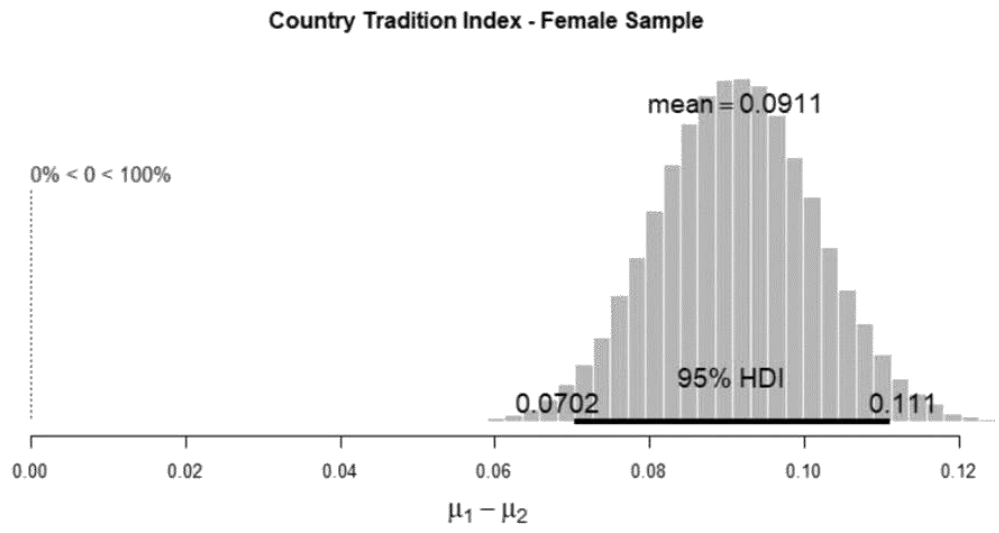
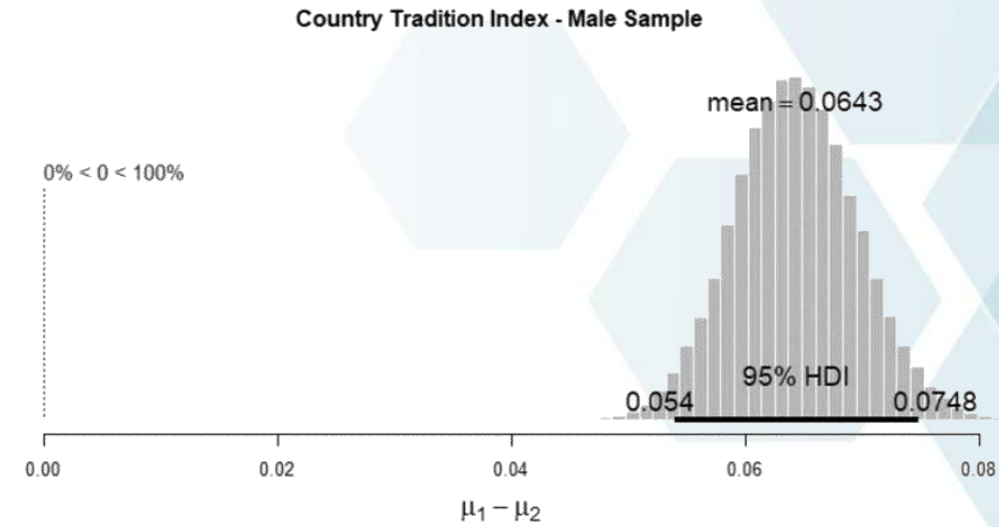
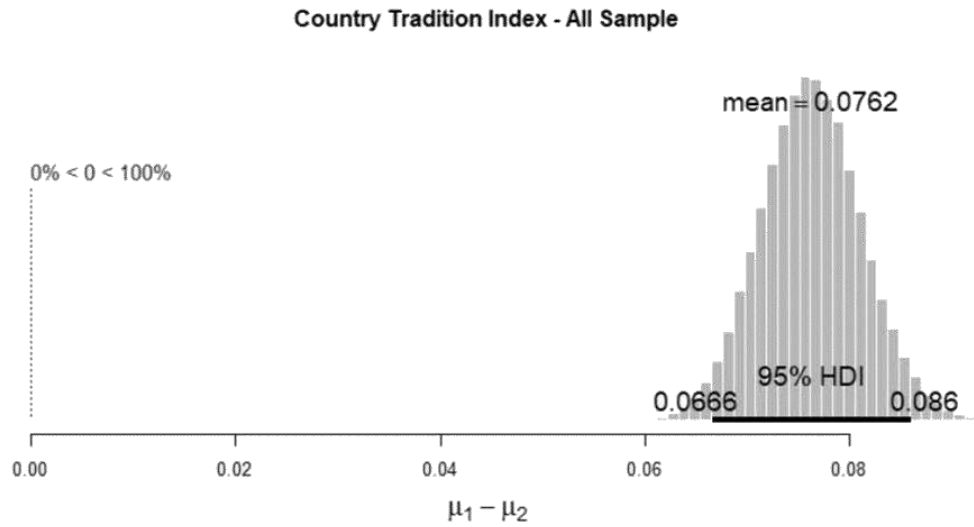


Figure 3: Bayesian estimation to compare the country tradition index between winners and losers in whole sample, male, and female groups



Information Collection



Combine the extracted ranking data and the country tradition index



Data normalization 0 to 1



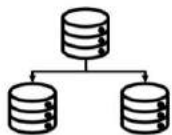
Final dataset



Final dataset



Differences Between Winners and Losers



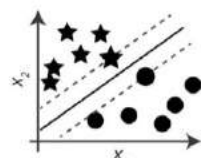
Split dataset into train and test data



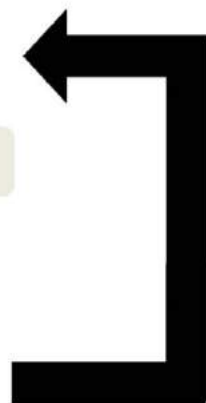
Test dataset

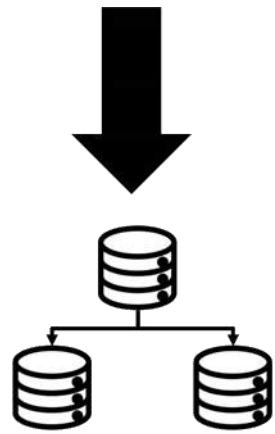


Train dataset

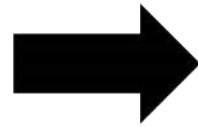


Support-vector machines

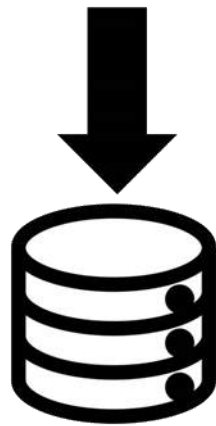




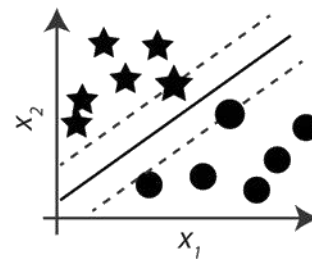
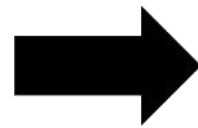
Split dataset into train and test data



Test dataset



Train dataset

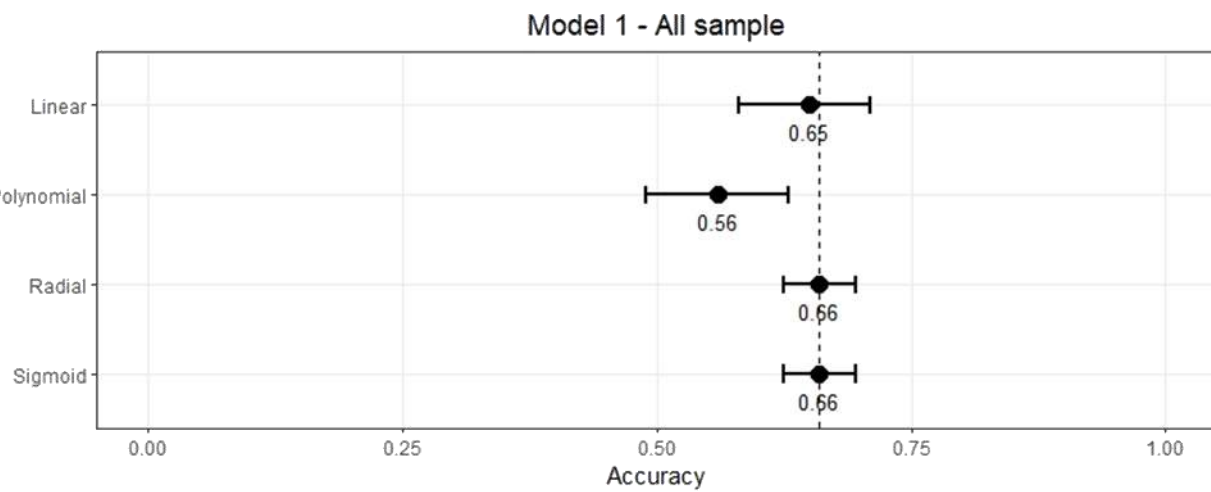


Support-vector machines



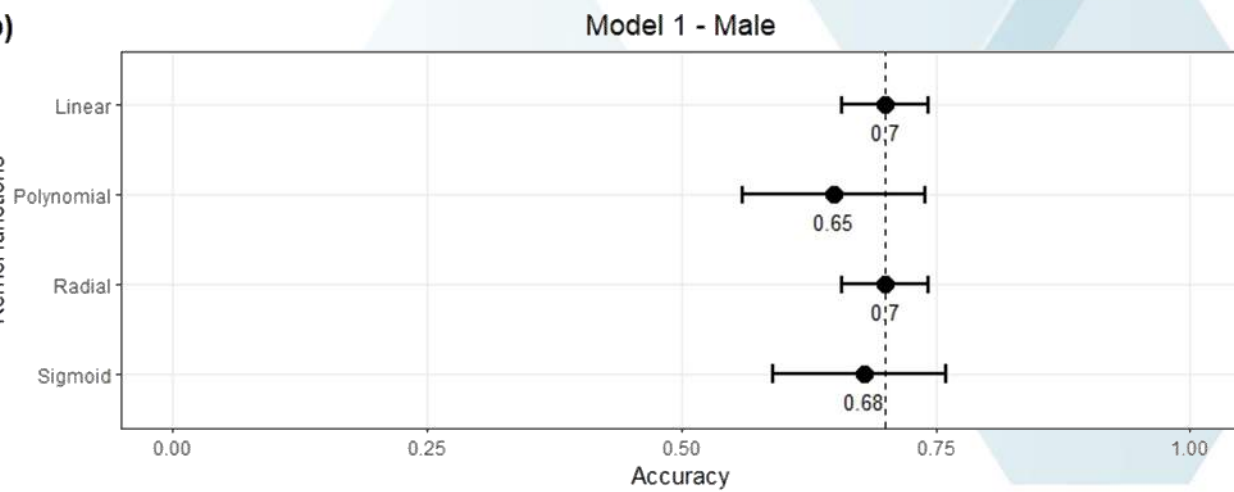
a)

Kernel functions



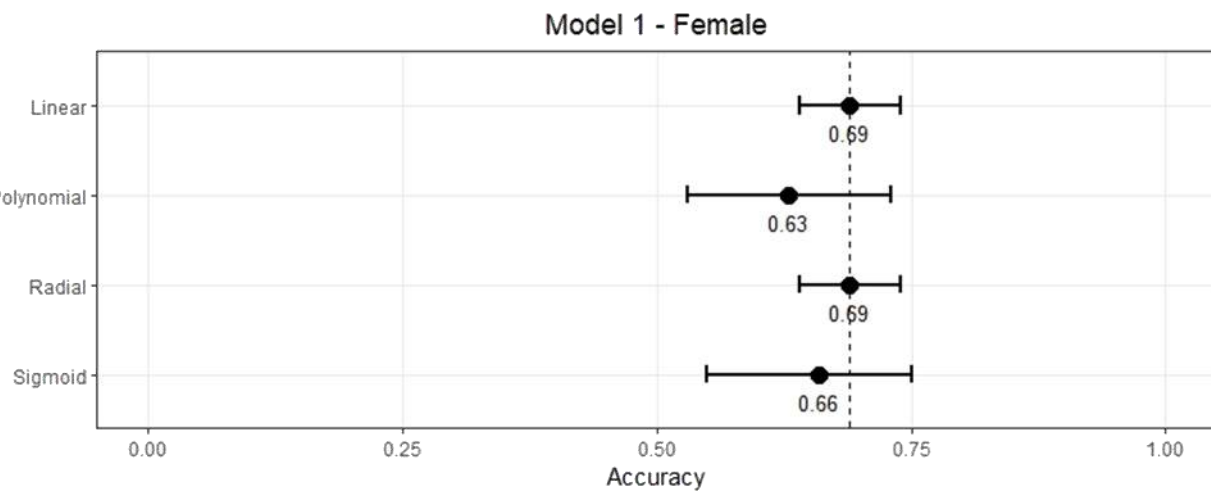
b)

Kernel functions

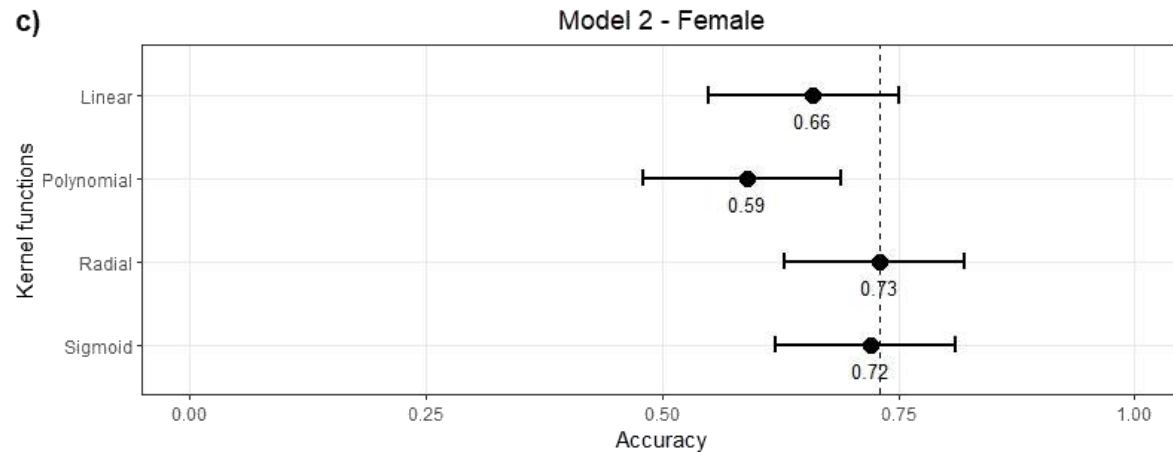
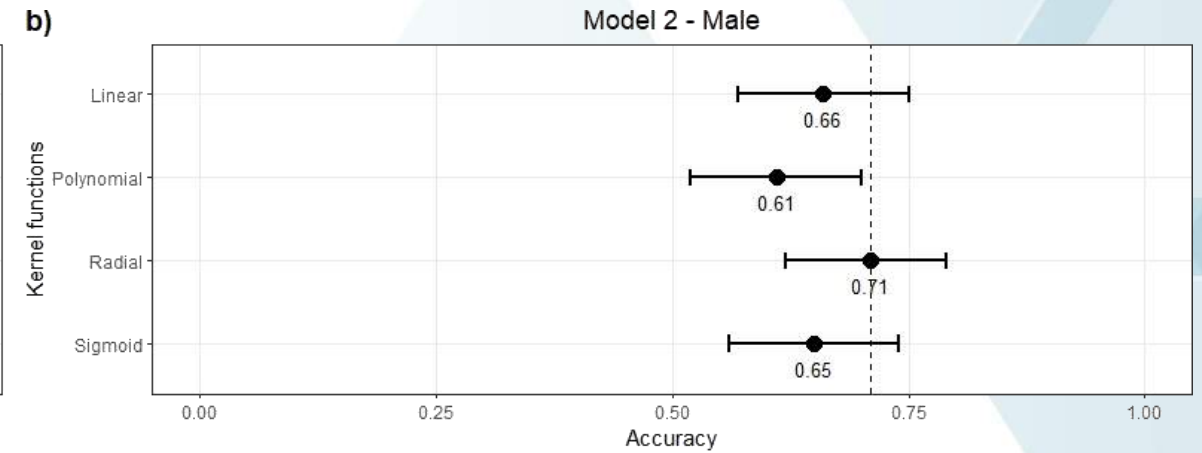
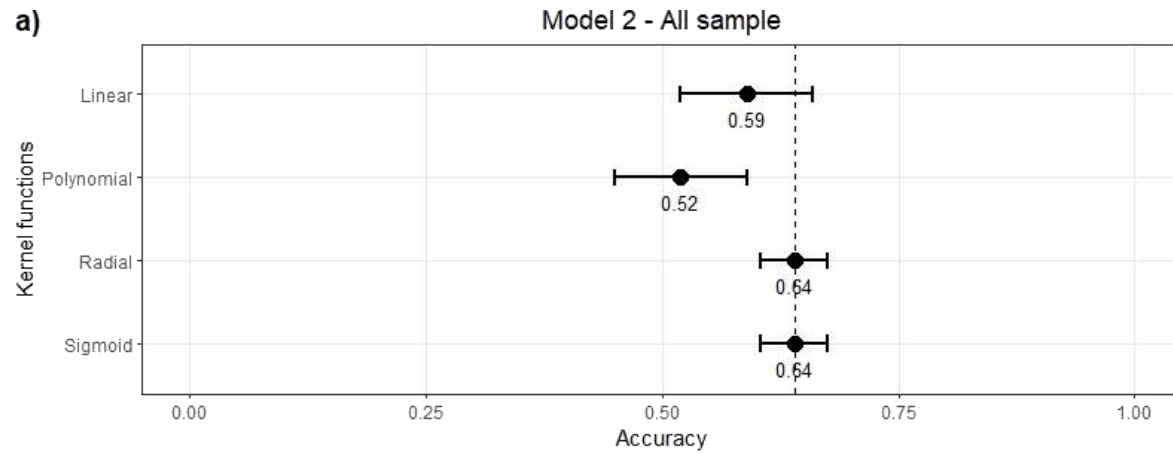


c)

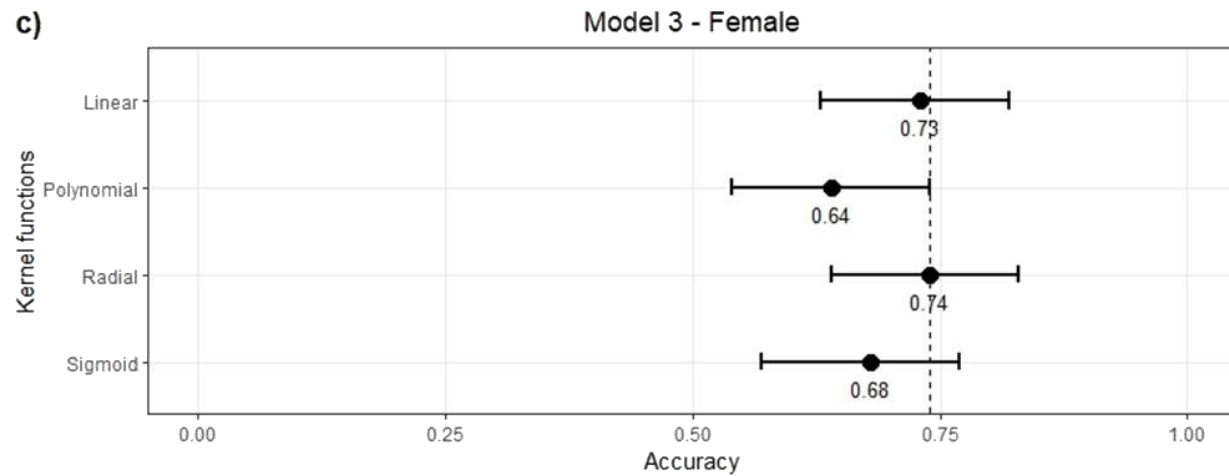
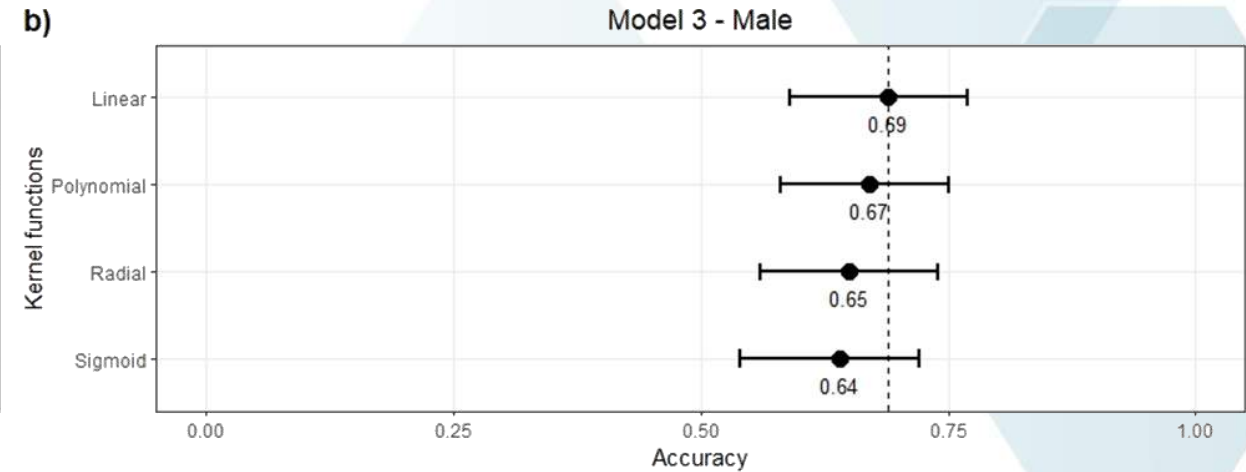
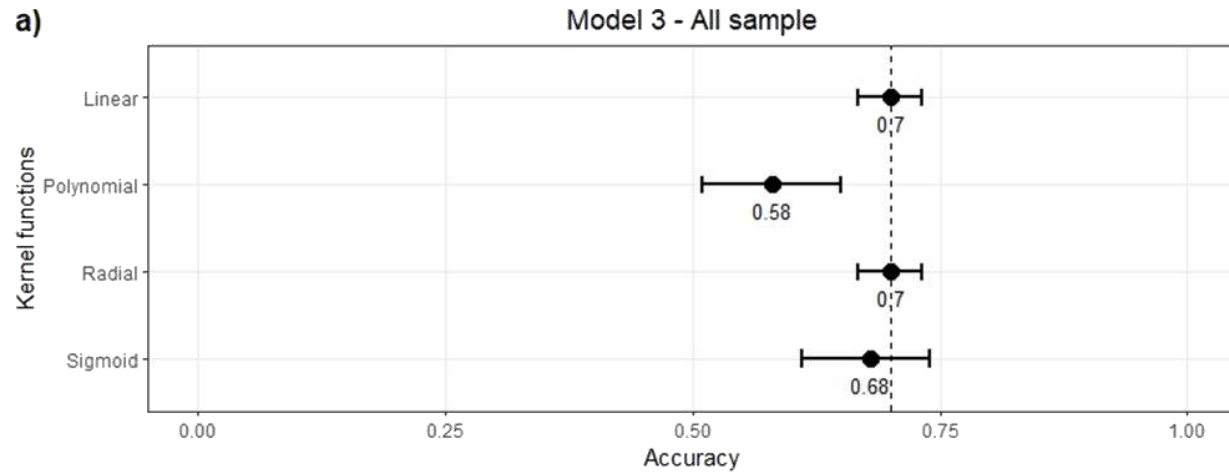
Kernel functions



1) The rank of the athlete and the rank of the opponents (Model 1)



2) The country tradition index of the athlete and the country tradition index of the opponents (Model 2)



3) The rank and country tradition index of the athlete and the rank and country tradition index of the opponents (Model 3)

E agora?

- Ter modelos cada vez mais robustos;
- SUJEITO! “Single – Case Report”
- Quantidade enorme de dados
- Séries temporais...

Resumo

- **Ciências de Dados é uma realidade muito distante da prática?**
- **NÃO!**
- **Cada vez mais estamos migrando de um modelo “indireto” para modelos “diretos”**

OBRIGADO!

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 **@maiconbhz**