

# Intradialytic Exercise and Season Variations in Hemodialysis Patients

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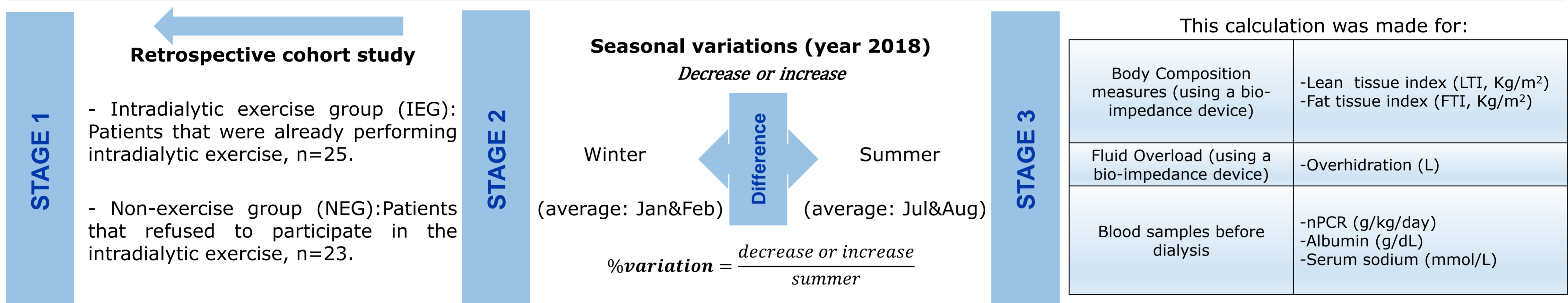
## Introduction

Biological and circadian rhythms play an important role in human physiology. It is known that seasonal variations may affect body composition (BC), dietary intake, physical performance and other important parameters in end-stage renal disease (ESRD) patients. However, how exercise can influence those variations is poorly understood.

## Objectives

To evaluate the effect of an intradialytic exercise programme (IEP) on seasonal variations of BC, normalized protein catabolic rate (nPCR), albumin, serum sodium and fluid overload (FO).

## Methods



## Results

**Table 1 – Sample description**

	IEG (n=25)	NEG (n=23)	P Value
<b>Age Years</b> <i>mean (SD)</i>	66.1±12.5	73.0±13.5	p=0.07*
<b>Dialysis vintage years</b> <i>mean (SD)</i>	5.0±4.8	6.7±6.1	p=0.252**
<b>Female (n; %)</b>	17; 68	17; 73.9	p=0.653***
<b>Treatment modality</b>			
HDF (n; %)	22; 88	20; 87	p=0.913***
HD (n; %)	3; 12	3; 13	
<b>Vascular access</b>			
AVF (n; %)	23; 92	20; 87	p=0.077***
AVG (n; %)	2; 8	0; 0	
CVC (n; %)	0; 0	3; 13	
<b>Diabetes (n; %)</b>	8; 32	6; 26.1	p=0.653***
<b>Age-adjusted Charlson Comorbidity Index</b> <i>mean (SD)</i>	6.8±2.3	6.0±2.4	p=0.251*

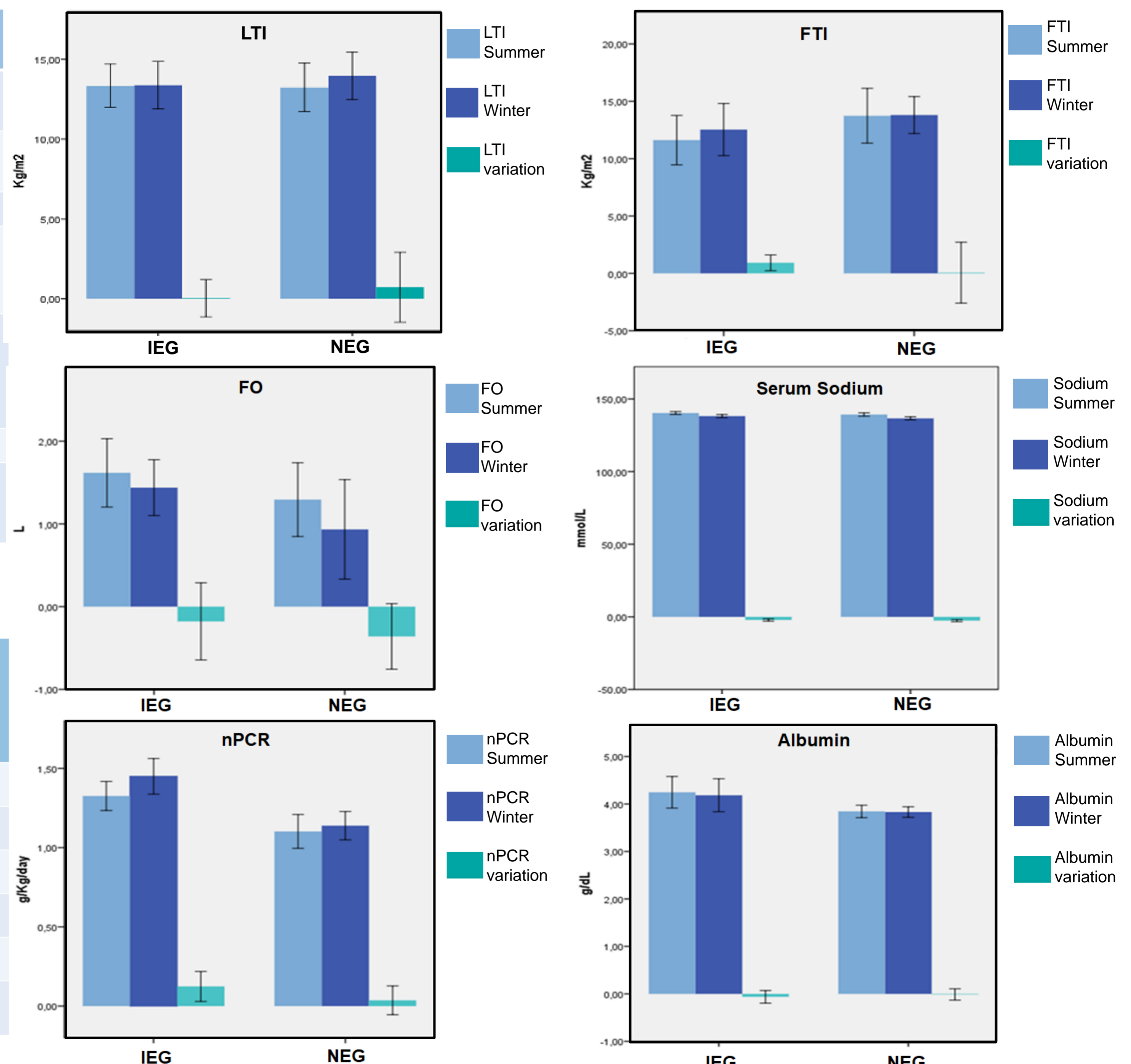
\*Independent samples T-test; \*\*Mann-Whitney; \*\*\*Chi-square

**Table 2 – % Variation in both groups (summer versus winter)**

	IEG (n=25)		NEG (n=23)		p
	Median	Interquartil Range	Median	Interquartil Range	
<b>LTI (kg/m<sup>2</sup>)</b>	-3.88	12.34	6.85	35.15	0.486*
<b>FTI (kg/m<sup>2</sup>)</b>	7.04	18.62	1.45	63.34	0.486*
<b>FO (L)</b>	-19.23	49.04	-14.78	11.27	0.634*
<b>nPCR (g/kg/day)</b>	13.79	28.33	0.55	22.00	0.133*
<b>Albumin (g/dL)</b>	-2.27	9.53	-1.25	10.54	0.831*
<b>Serum Sodium (mmol/L)</b>	1.81	2.12	-1.61	1.45	0.327**

\*Independent samples T-test; \*\*Mann-Whitney

**Figure 1 – Seasonal variations for LTI, FTI, Fluid Overload (FO), serum sodium, nPCR, albumin**



## Conclusion

Patients that were in the intradialytic exercise group had a better overall body composition and nutritional parameters (nPCR and albumin). However, these patients also had higher fluid overload values. The intradialytic exercise had no influence on seasonal variations. Nevertheless, more studies are needed to understand this relationship.

## References

1. Broers, N. J., Usvyat, L. A., Marcelli, D., Bayh, I., Scatizzi, L., Canaud, B., ... & Kooman, J. P. (2014). Season affects body composition and estimation of fluid overload in haemodialysis patients: variations in body composition; a survey from the European MONDO database. *Nephrology Dialysis Transplantation*, 30(4), 676-681.