

# ACCURACY OF RESTING ENERGY EXPENDITURE (REE) IN WOMEN WITH BREAST CANCER

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## BACKGROUND&AIMS

Breast cancer (BC) is one of the most prevalent tumors among women worldwide. Patients with BC tend to develop several nutritional complications, such as obesity, metabolic syndrome and sarcopenia. Therefore, an accurate estimate of resting energy expenditure (REE) is crucial for determining their energy needs. The aim of this study is to compare REE measured (MREE) by indirect calorimetry and REE predicted (PREE) from selected formulas in women with BC.

## METHODS

Women aged  $\geq 18$  years with a newly diagnosis of BC (stage 0-III) and BMI  $< 30\text{kg/m}^2$  were recruited. Anthropometry, indirect calorimetry and bio-impedance analysis (BIA) were performed. Prediction accuracy of REE was assessed at both group (bias) and individual level (precision) using established equations for the general population, plus one specifically developed from cancer patients (Souza et al. 2018).

## RESULTS

A total of 106 women with BC were included. Age, anthropometric characteristics, BIA variables and MREE are shown in Table 1. There was an overall tendency towards an underestimation of REE, unrelated to the equations used. The least bias was reported for these anthropometric based-equations: FAO, Owen and Marra. Whereas, for those including BIA variables, the Muller, Wang and Marra equations showed the best fit (Figure 1). Precision widely varied among formulas, with the highest values ( $\geq 70\%$ ) observed for the two Marra equations, followed by the Harris-Benedict and Muller (FFM) formulas (Figure 2).

Table 1. Anthropometry, BIA variables and MREE

N=106		Mean $\pm$ SD
Age	years	49.9 $\pm$ 11.1
Weight	kg	63.1 $\pm$ 7.3
Stature	cm	161 $\pm$ 7
BMI	kg/m <sup>2</sup>	24.5 $\pm$ 2.8
FFM	kg	42.6 $\pm$ 3.8
FM	kg	20.6 $\pm$ 5.0
FM	%	32.2 $\pm$ 5.1
BI	cm <sup>2</sup> /ohm	44.5 $\pm$ 5.2
PhA	degrees	5.58 $\pm$ 0.56
MREE	kcal/die	1391 $\pm$ 158
MREE/FFM	Kcal/kg	32.7 $\pm$ 2.8
RQ		0.85 $\pm$ 0.05

BMI: Body Mass Index; FFM: Fat Free Mass; FM: Fat Mass; BI: Bioimpedance Index; PhA: Phase Angle; MREE: Measured Resting Energy Expenditure; RQ: Respiratory Quotient; SD: Standard Deviation.

Figure 2. Prediction accuracy (precision) for measurements of REE within  $\pm 10\%$  in BC patients

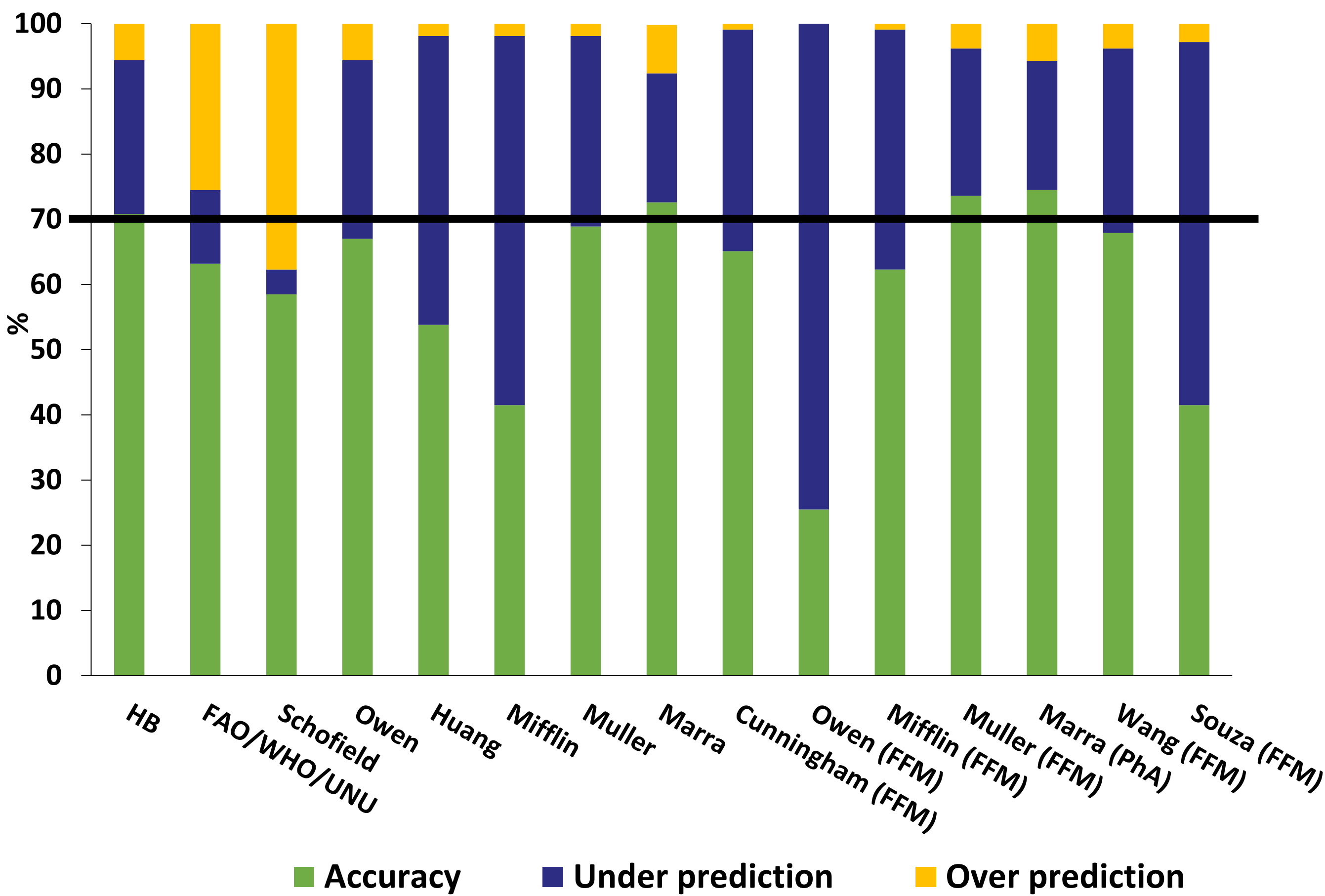
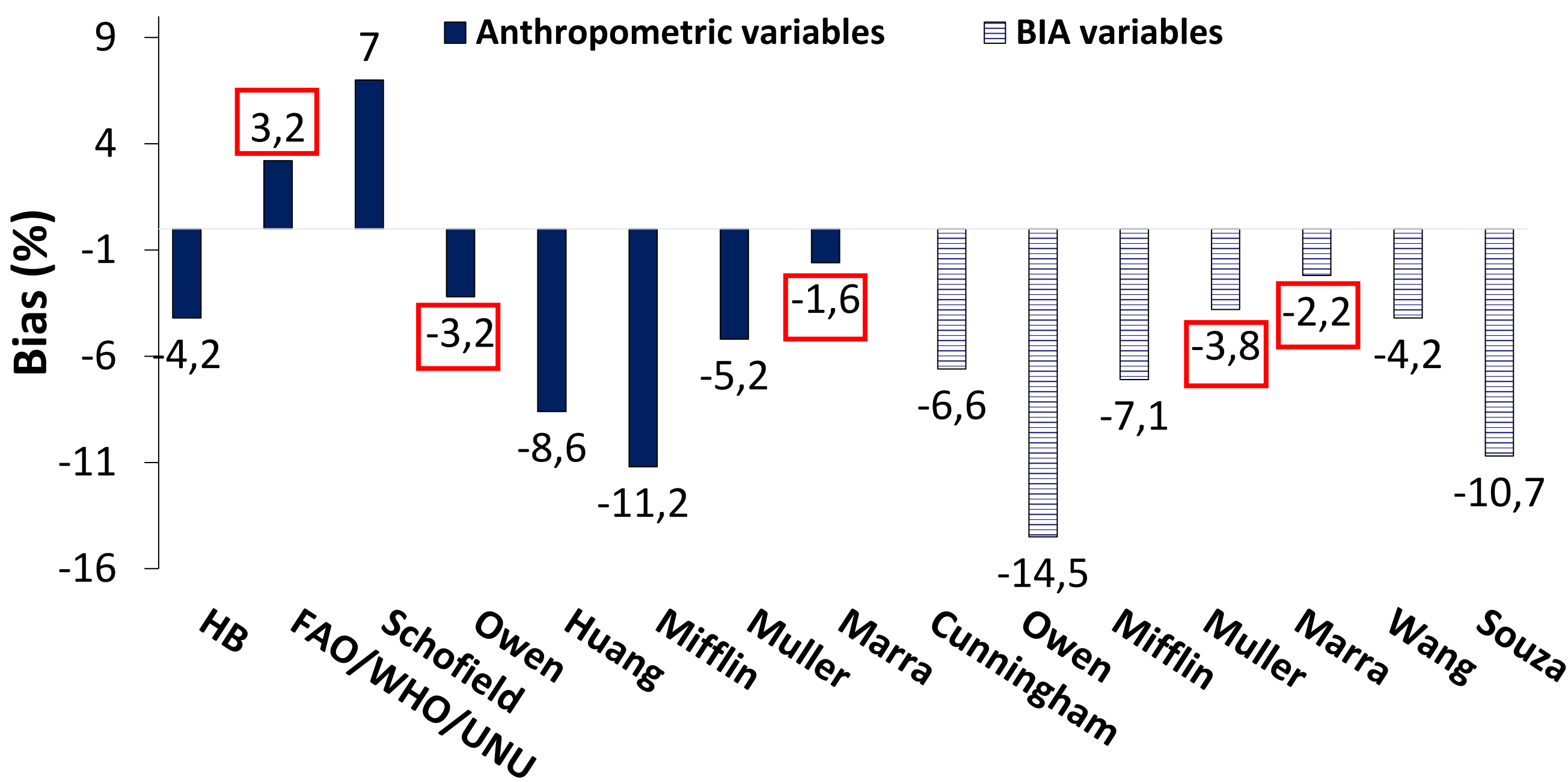


Figure 1. Bias expressed as percentage differences between PREE and MREE using different equations in BC patients



## CONCLUSIONS

None of the considered predictive equations provides accurate and precise REE estimates in this group of BC patients. Although the Marra equations achieved the best accuracy, further studies are needed to evaluate the variability of REE in this population.

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26-28 ottobre 2023 | ROMA