

Iron Supplementation and Stress Fractures in 2,910 Female Combatants with Low Ferritin Without Anemia

Propensity-score-matched cohort emulating a target trial · Israel Defense Forces, 2014–2024

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BACKGROUND

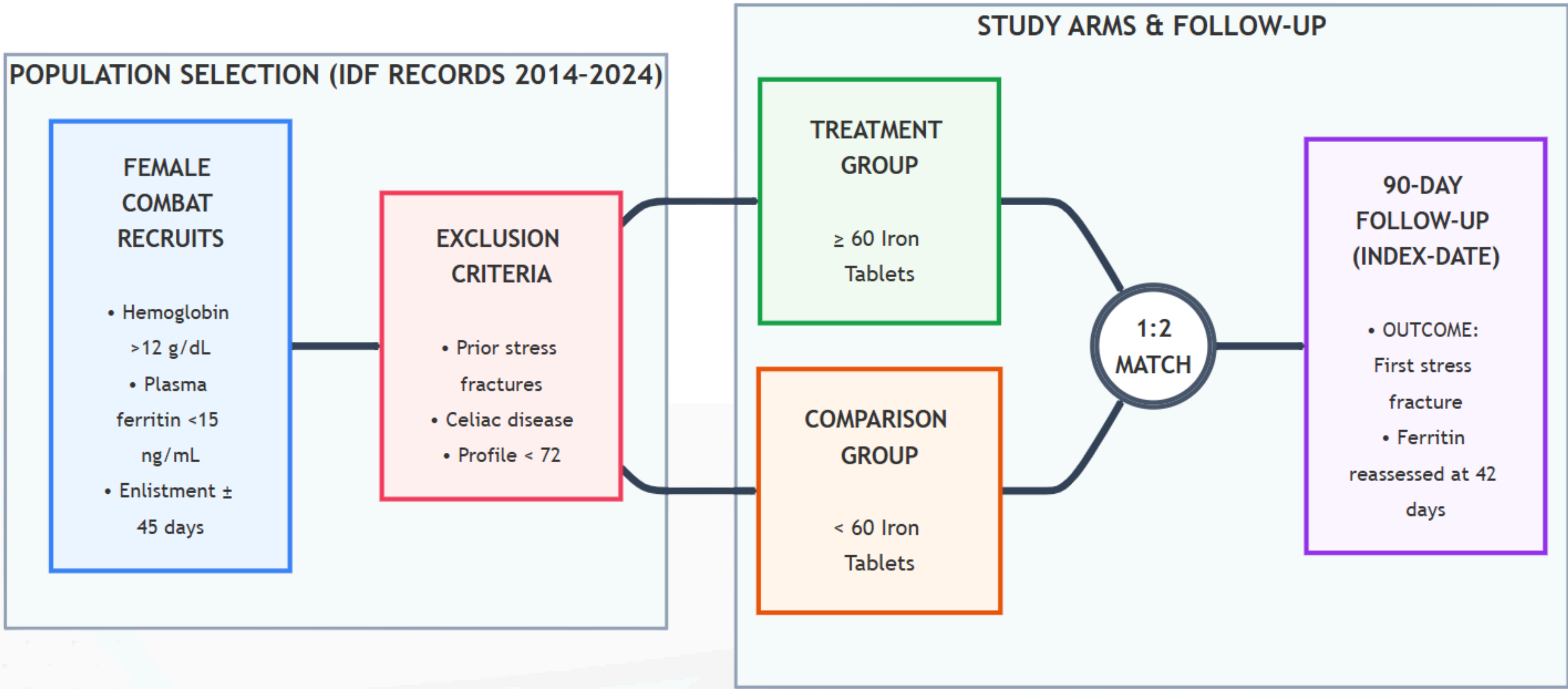
Iron deficiency is common in female combatants — menstrual loss combined with intense training — and even **without anaemia** it may weaken bone. Iron-deficiency anaemia has been linked to **stress fractures (SF)**, yet whether iron supplementation prevents SF in iron-deficient, non-anaemic recruits is unknown.

Could iron supplementation prevent stress fractures in these soldiers?

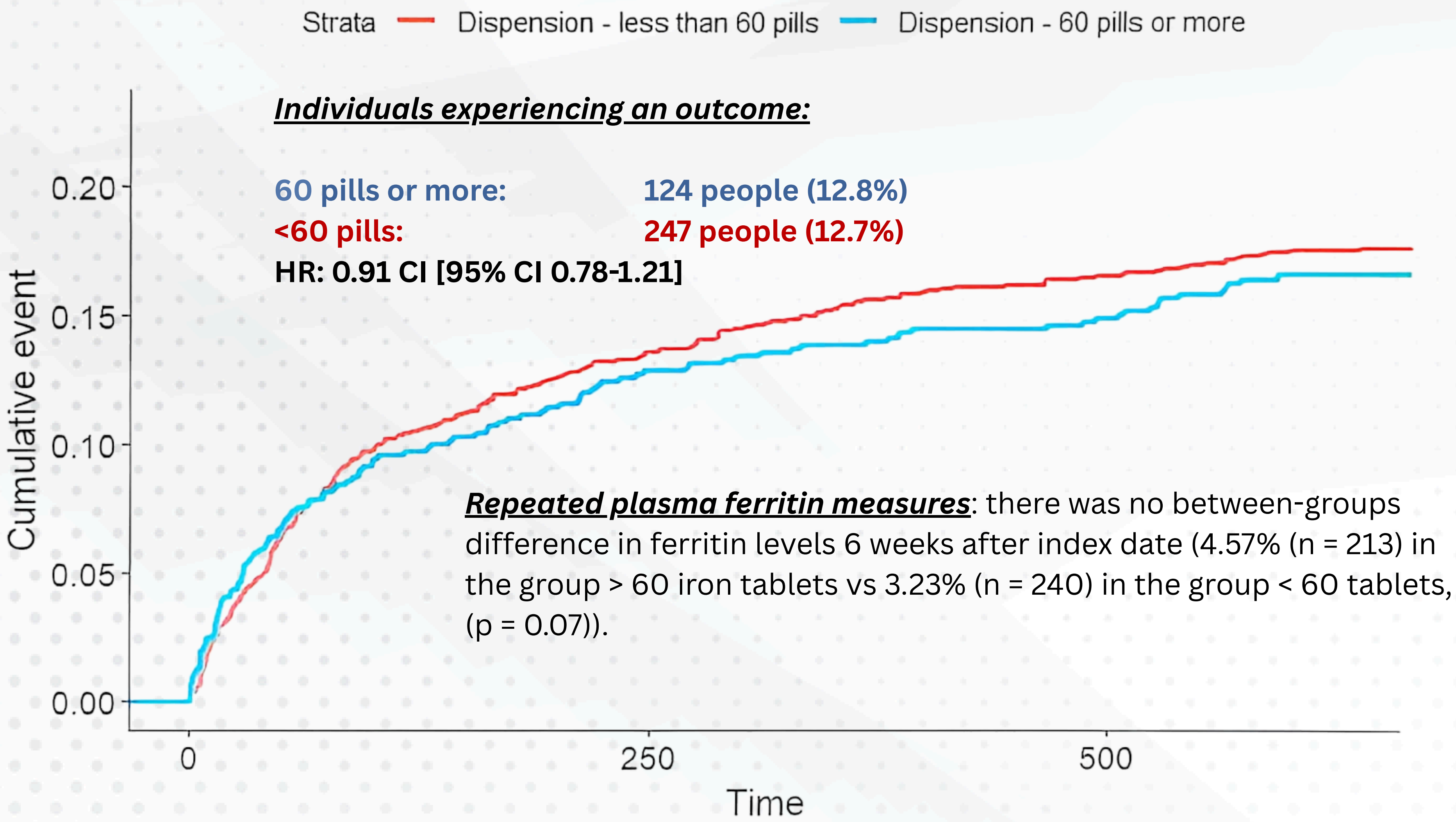
RESULTS

Variable	Overall (n=2910)	<60 tablets (n=1940)	≥60 tablets (n=970)	p-value	SMD
Age at enlistment (years), mean (SD)	18.75 (0.51)	18.75 (0.54)	18.75 (0.45)	0.866	0.007
BMI (kg/m ²)				0.986	0.015
<18	40 (1.4)	27 (1.4)	13 (1.3)		
18–25	2341 (80.4)	1562 (80.5)	779 (80.3)		
25–32	503 (17.3)	333 (17.2)	170 (17.5)		
>32	26 (0.9)	18 (0.9)	8 (0.8)		
Ferritin (ng/mL), mean (SD)	9.22 (3.05)	9.22 (3.05)	9.23 (3.06)	0.906	0.005
Haemoglobin (g/dL), mean (SD)	12.87 (0.63)	12.87 (0.63)	12.88 (0.62)	0.762	0.012

METHODS



- **Kaplan–Meier and Cox** proportional hazards models compared stress fracture incidence after day 90.
- **Matching** - baseline ferritin | BMI | combat classification | sociodemographic parameters
- **Ferritin response** was assessed 6 weeks after the index date.



CONCLUSIONS

Iron supplementation initiated during early military training was not associated with reduced SF risk after the first 90 days of enlistment. The minimal rise in ferritin levels with iron supplementation can be explained by limited adherence or effectiveness of the oral supplementation strategy.