

# Greater Grip Strength Correlates with Lower Risk of Non Alcoholic Fatty Liver Disease

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8° **WORKSHOP NAZIONALE CISAI**

PERUGIA, 30 - 31 MARZO 2017

**Prevenzione e gestione  
delle co-morbidity associate all'infezione da HIV**



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# Disclosures

- Dr. Stefano Zona has received payments for lectures (BMS, MSD, Abbvie, Gilead)



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# From LD to Sarcopenia



58 yrs  
Farmer  
Lives with wife

HIV diagnosis: 1997  
CDC group A  
CD4 nadir 17/microL  
DRV/r+RAL (9<sup>th</sup> regimen)  
CD4=948/microL HIV VL<40 c/mL (ND)

## Antropometry

BMI=23.3  
Waist=102 cm  
Leg fat%=15%  
VAT=133 cc

## Life style

Sedentary  
Non smoker  
(pack year=0!)

## Co-morbidities

✓HTN  
✓T2DM  
✓Dislipidemia  
✓Erectile disfunction

✓Jun 2014 CAC=105  
✓Oct 2014 IMA NSTEMI  
✓Trivascular bypass

## Polifarmacy

ASA 100  
Pravastatin  
Fenofibrate  
Vit D

✓ NAFLD assessed  
with CT scan  
(L/S=0.98)

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# DEXA for Body Composition



Date	Body weight	FatLeg%	Bone mass	Fat Mass	Lean Mass	FFMi	FFMiZScore
18/10/04	58789	4,62%	1040	3617	54132	18,08681	-1,081998
17/05/05	58008	4,73%	1037	3560	53411	18,05401	-1,09461
18/01/06	56864	4,73%	1031	3395	52438	17,58172	-1,27626
06/09/06	59013	4,90%	984	3619	54410	18,20073	-1,038182
20/02/08	64287	5,81%	731	6245	57311	19,3723	-0,5457081
12/01/09	64538	6,41%	707	7282	56549	18,93814	-0,8010909
18/11/09	61789	7,46%	778	6304	54707	18,32093	-1,164159
16/11/10	64904	7,53%	730	7092	57082	19,11665	-0,6960902
22/11/11	64607	8,64%	770	8320	55517	18,59253	-1,004394
20/11/12	62368	13,15%	773	10788	50807	16,97584	-1,955386
10/12/13	63740	13,82%	793	11261	51686	17,26954	-1,782625
31/08/15	63751	15,57%	821	12884	50046	16,72157	-2,104955
Delta Lean mass 2010-2015= -					7036		

Hand grip = 35 KJ =25%

Chair stand test = 17/30'' =25%

Sarcopenia!

Pre-Frailty phenotype

Geriatrician prescription:

Physical therapy, Vit D

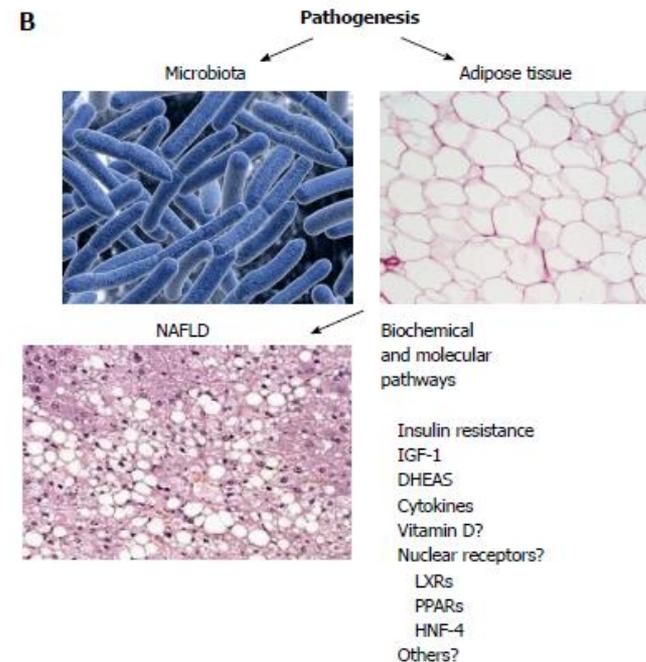
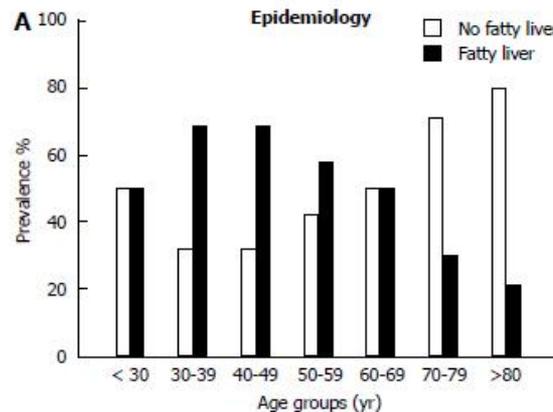
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**WJG** World Journal of Gastroenterology

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TOPIC HIGHLIGHT

WJG 20<sup>th</sup> Anniversary Special Issues (12): Nonalcoholic fatty liver disease

**Nonalcoholic fatty liver disease and aging: Epidemiology to management**

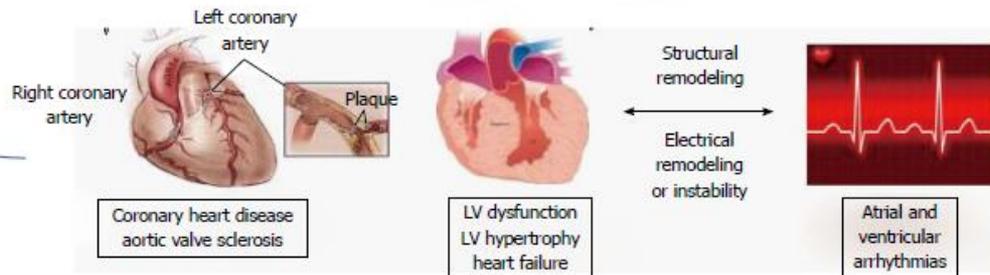
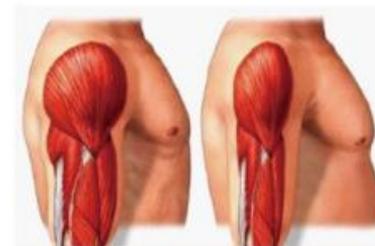
Marco Bertolotti, Amedeo Lonardo, Chiara Mussi, Enrica Baldelli, Elisa Pellegrini, Stefano Ballestri, Dante Romagnoli, Paola Loria

Clinical manifestations



Dementia

Sarcopenia

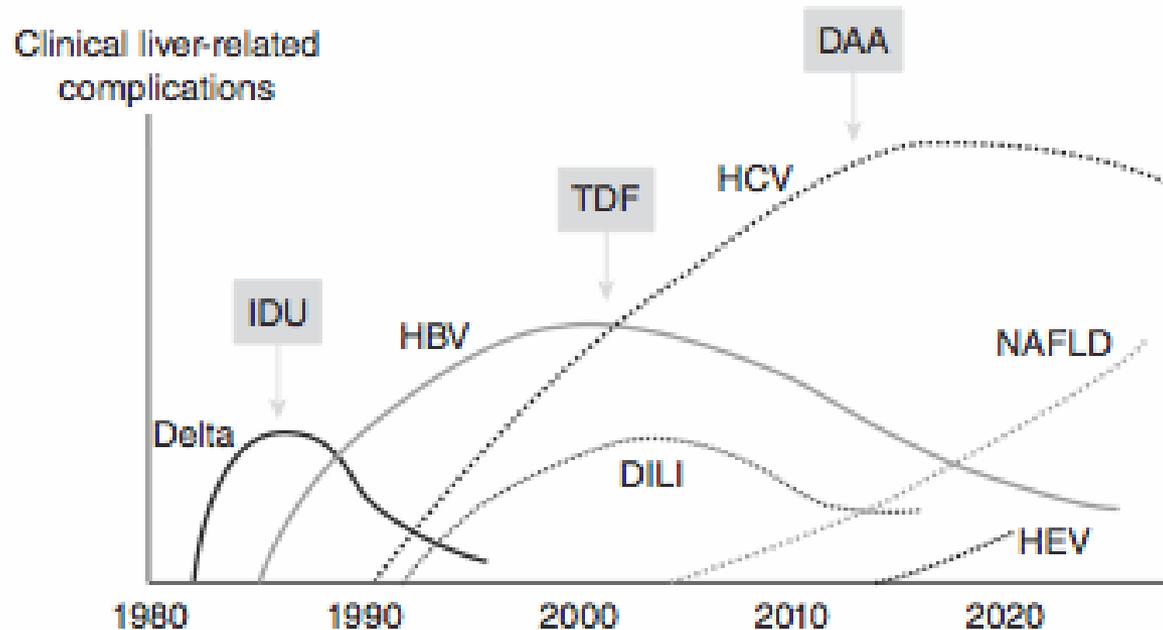


Autonomic and cardiovascular changes

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delle co-morbidità

# The Changing Epidemiology of LD in HIV patients



Time trends in liver disease etiologies in HIV patients.

DAA: direct-acting antivirals; TDF: tenofovir; IDU: intravenous drug users; NAFLD: non-alcoholic fatty liver disease; DILI: drug-induced liver injury; HEV: hepatitis E virus.

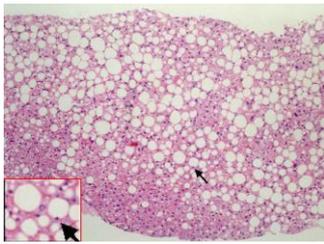
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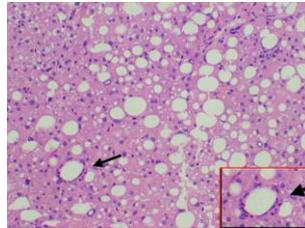
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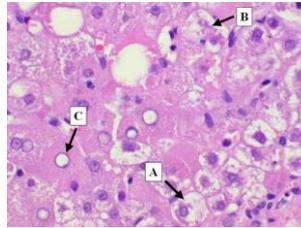
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Steatosi semplice



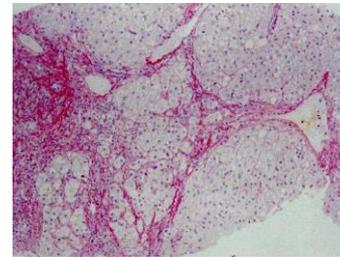
NASH



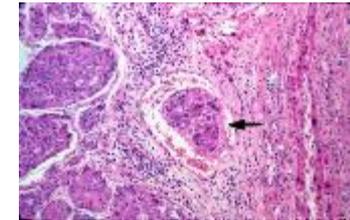
A- Infiammazione lobulare e lipogranulomi  
B- Deg.balloniforme  
C- Nuclei glicogenati



NASH-cirrosi o  
Cirrosi "criptogenetica"



Carcinoma Epatocellulare HCC



**Prevalence**

**General population:**

- NAFLD: 20-30%
- NASH: 2-3%

**NASH in selected populations:**

- Patients ↑ Transaminases: 43-55%
- Morbidly Obese: 49%
- Diabetics: 21-22%

# Objective

- We assessed the relationship between grip strength (GS) and NAFLD in HIV-infected persons receiving ART.



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# Methods

- GS was assessed using a hand-grip dynamometer
- NAFLD was diagnosed by liver-spleen attenuation values of  $<1.1$  on CT scans among persons without chronic viral hepatitis nor high amounts of alcohol consumption.
- Sarcopenia was defined using Baumgartner's criteria using DEXA derived appendicular skeletal muscle index  $< 7.26 \text{ kg/m}^2$  for males.



# Results

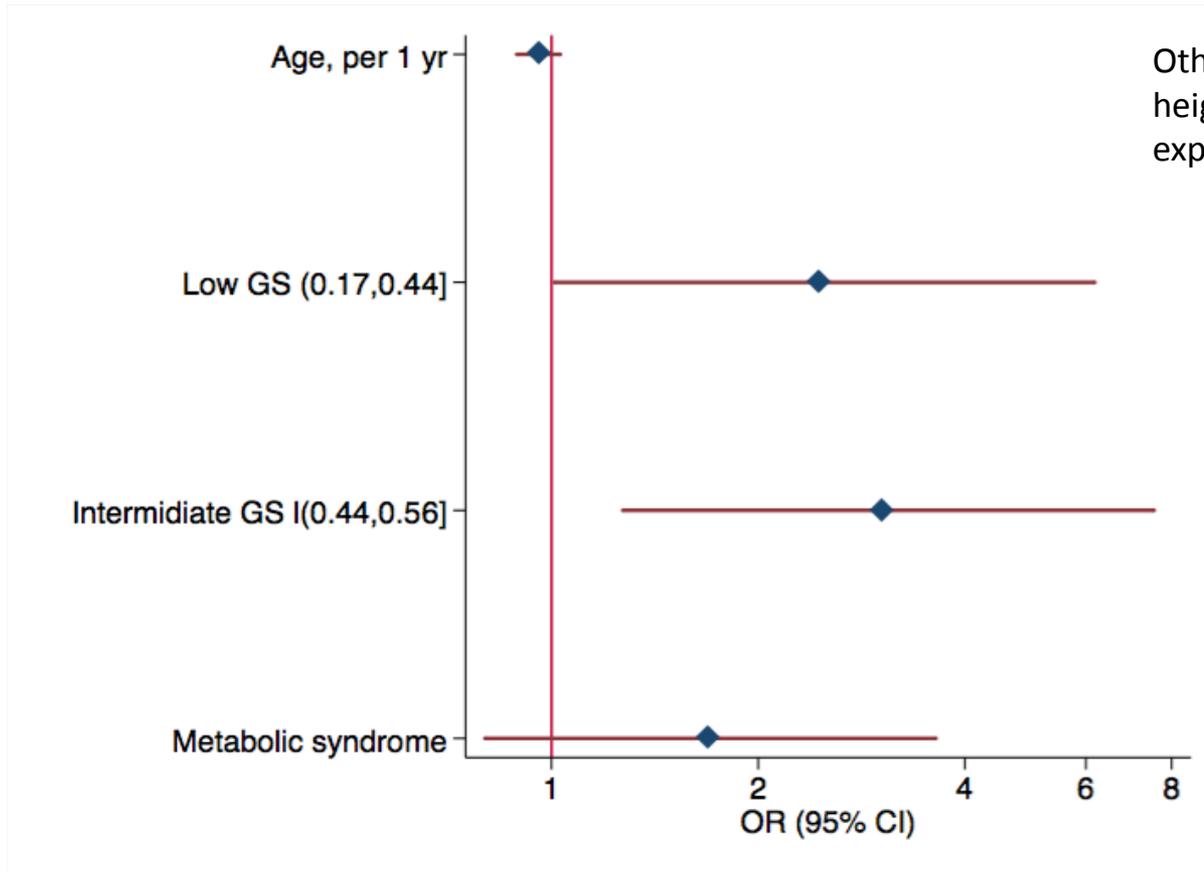
- We enrolled 161 male patients. Mean (SD) age was 56.65 (5.84), BMI was 24.55 (2.95).
- Mean HIV infection duration was 227.07 (78.09) months, HIV RNA level was <40 copies in 143 (95.33%) of participants
- median current CD4=630 (489-790.5) cells/ $\mu$ L
- NAFLD was diagnosed in 53 (32.9%) pts
- Sarcopenia was present in 40 (27.9%) pts
- Mean hand grip measurement in the dominant hand was 37.53 ( $\pm$ 7.61) Kg



# Results

	No NAFLD	NAFLD	p-value
<b>Age</b>	51.76 (8.92)	53.51 (6.91)	0.14
<b>HTN</b>	92 (51.11%)	56 (70.89%)	<0.01
<b>T2DM</b>	17 (9.44%)	17 (21.52%)	0.01
<b>Cirrhosis</b>	14 (7.78%)	10 (12.66%)	0.31
<b>CVD</b>	9 (5%)	13 (16.46%)	0.01
<b>Dyslipidemia</b>	161 (89.44%)	73 (92.41%)	0.61
<b>Low GS (0.17,0.44]</b>	31 (28.70%)	19 (35.85%)	0.04
<b>Intermideate GS (0.45,0.56)</b>	29 (26.85%)	21 (39.62%)	
<b>High GS (0.57,0.85]</b>	48 (44.45%)	13 (24.53%)	

# Results



Other variables included in the model:  
height, smoke, CD4 nadir, cumulative  
exposure to different ARV classes

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# Discussion

- Greater GS was independently associated with lesser risk of NAFLD among HIV infected adults with a high prevalence of metabolic disease
- NAFLD is the barometer of metabolic health which join metabolic and inflammatory components
- NAFLD is an age related condition

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# Thanks for you kind attention

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