Human Catapult problem and solution.

On YouTube, there is a video called Xtreme Catapulting showing a man set up a lever, stand on one end, and get shot up into the air when a large weight falls on the other end of the lever.

Problem: How many g's of acceleration does the man experience in order to be catapulted as high as he gets?
(This can shed some light on whether this is even possible without severe injury. If not, the video may be a fake.)

One Solution: If you can figure out how high the man gets, then you can answer the question: what must his initial velocity be? Then you can attack the question: how much acceleration did he undergo to reach that velocity.

Simplifying assumptions include: 1) the man undergoes projectile motion with no air resistance, 2) the man's acceleration occurs uniformly over the time of contact of the weight with the board, 3) the weight is undergoing freefall even after it contacts the plank.

Measurements can be made (with some difficulty and great uncertainty) off of the computer screen. Assuming (4) that the man is 6' tall (1.8m), I estimated that the weight is dropped from a height of: y_{wd}=29 m.
The height of the high end of the plank is: y_p=1.2 m.
The Maximum height reached by the man is: y_{max}=140 m. (very uncertain!)

Steps:
What must be the initial velocity, v_i, of the man if y_{max}=140 m?
Use $v_i^2 - 0 = 2a(y_{max})$,
v_i=sqrt(2*9.8*140) = 53 m/s.
Over what time interval, Δt, is the weight pushing down on the lever?
$\Delta t = y_p/v_w$ where v_w = speed of weight when it hits plank and y_p=1.1m.
Find speed of weight when it hits the plank using: $v_w^2 - 0 = 2a(y_{wd} - 0)$ with y_{wd}=29 m.
v_w = sqrt(2*9.8*29) = 24 m/s.
Then $\Delta t = y_p/v_w$ = 1.2m/(24m/s) = 0.05 sec.
What acceleration did the man undergo if his speed changed by 53 m/s in 0.05 seconds?
$a = \Delta v/\Delta t = 53/0.05 = 1060\ m/s^2$!!
In g's this is #g's = 1060/9.8 = **108 g**

This is much larger than the max brief g-force that pilots can walk away from , 45 g, but smaller than the largest known survived g-force (170 g). So it is possibly real, but surprising if the man isn't injured.