Hello,

To get the vector of the mean over 2 dimensions, use total, like:

tab = findgen(3,3,3)
print,total(total(tab,1),1)

Play with the indices to mean over the dimension you want
(don't forget to divide by the product of the dimensions ;-).
Perhaps the order influences the speed if your tab doesn't have
the same dimensions?

To transform the 1D into 3D, first go to 2D, using:
tab2 = total(total(tab,1),1) # replicate(1,3)
tab2 = replicate(1,3) # total(total(tab,1),1)
or:
tab2 = replicate(1,3) ## total(total(tab,1),1)
tab2 = total(total(tab,1),1) ## replicate(1,3)
I don't know which of both is the quickest.

From 2D to 3D, I don't know without loop:

tab3 = fltarr(3,3,3,/nozero)
for i = 0,2 do tab3[*,*,i] = tab2

It's important to have the *'s as the first indices.
Hope it's help.

Christophe.