Often you may have constructed a contrast matrix on your own and you want to test if it is orthogonal or not. Here is an R script that does the job for you:

```
owncontr=cbind(
c(4,-1,-1,-1,-1),
c(0,1,1,-1,-1),
c(0,0,0,1,-1),
c(0,1,-1,0,0)) # set up an example contrast matrix


sum(
owncontr[,combn(ncol(owncontr),2)[1,]]*
owncontr[,combn(ncol(owncontr),2)[2,]])

# if this sum is exactly zero, your user-defined contrast matrix is orthogonal!

# Code written by C. Scherber, January 2009.

######################
```

Similarly, you can test for orthogonality in any matrix. Below comes an example from Shayle R. Searle (2006), "Matrix algebra useful for statistics",Wiley, translated into R code:

```
mymat=cbind(
c(2^0.5,2^0.5,2^0.5),
c(3^0.5,-3^0.5,0),
c(1,1,-2))


library(MASS)
round(mymat%*%ginv(mymat),0)

# the result is an identity matrix
# because mymat x mymat´ is an identity matrix,
# mymat is an orthogonal matrix.

# Code written by C. Scherber, December 2011.
```