ods pdf file = "K:\BIOS 653\project\Output\_model9.pdf";

/\*this version has these variables in the model: Sex Group\*days Fatmass\_cent MuscleGlycogen\*/;

**data** exercise;

infile 'K:\BIOS 653\project\data\_biostat653\_project.csv'

delimiter = ','

dsd

missover

firstobs = **2**

DSD;

input ID $ Sex $ Group $ Days Fatmass MuscleGlycogen GIRperkgFFMperinsulin;

**run**;

/\*

proc contents data = exercise;

run;

\*/

**proc** **print** data = exercise (obs=**10**);

**run**;

\*just manaually doing the means, it's too annoying in SAS to automate it;

**data** exercise\_d;

set exercise;

Fatmass\_cent = Fatmass - **40.68**;

MuscleGlycogen\_cent = MuscleGlycogen-**595.4059**;

postVisit2 = (Days gt **90**);

postVisit2\_spline = postVisit2\*(Days-**90**);

**run**;

**proc** **print** data = exercise\_d (obs=**10**);

**run**;

/\* determine fixed effects model, functional form for Days. Using ML, unstructured for both fixed and random \*/;

title 'Days Continuous';

**proc** **mixed** data = exercise\_d method=ml;

class ID Group(ref='MICT') Sex;

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept Days/type = un subject = ID g gcorr v vcorr;

repeated/type = un subject = ID r rcorr;

**run**;

title 'Days Categorical';

**proc** **mixed** data = exercise\_d method=ml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept Days/type = un subject = ID g gcorr v vcorr;

repeated Days /type = un subject = ID r rcorr;

**run**;

/\* determine random effects model, whether random slope for time is needed. \*/

title "need for random slope, random int and slope unstructured";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept Days/type = un subject = ID g gcorr v vcorr;

repeated Days/type = un subject = ID r rcorr;

**run**;

title "need for random slope, random int, unstructured";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/ noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = un subject = ID r rcorr;

**run**;

/\* determine random effects model, whether random slope for time is needed, cs. \*/

title "need for random slope, random int and slope unstructured";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept Days/type = un subject = ID g gcorr v vcorr;

repeated Days/type = cs subject = ID r rcorr;

**run**;

title "need for random slope, random int, unstructured";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = cs subject = ID r rcorr;

**run**;

/\*explore different var cov matrix\*/;

title "csh";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = csh subject = ID r rcorr;

**run**;

title "un";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = un subject = ID r rcorr;

**run**;

title "ARH(1)";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = ARH(**1**) subject = ID r rcorr;

**run**;

title "ANTE(1)";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = ARH(**1**) subject = ID r rcorr;

**run**;

/\*need for group specific var cov matrix\*/

title "need for Group specific var cov matrix";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un group=Group subject = ID g gcorr v vcorr;

repeated Days/type = csh subject = ID r rcorr;

**run**;

title "need for Sex specific var cov matrix";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un group=Sex subject = ID g gcorr v vcorr;

repeated Days/type = csh subject = ID r rcorr;

**run**;

title "need for SexGroup specific var cov matrix";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un group=Sex\*Group subject = ID g gcorr v vcorr;

repeated Days/type = csh subject = ID r rcorr;

**run**;

title "drft final model";

**proc** **mixed** data = exercise\_d method=reml;

class ID Group(ref='MICT') Sex Days(ref='0');

model GIRperkgFFMperinsulin = Sex Days Group\*Days Fatmass\_cent MuscleGlycogen\_cent/noint solution;

random intercept/type = un subject = ID g gcorr v vcorr;

repeated Days/type = csh subject = ID r rcorr;

contrast "Day 90 vs 93" Days **1** -**1** /e;

contrast "change with time between groups" Days **1** -**1**

Group\*Days **1** -**1** **0** **0** **0** **0**

/ e ; **run**;