

5. Time blocks in which aggressiveness of autoISF should be modulated

V 2.0



Once the initial tuning according to [section 4](#) is done, you are ready to use autoISF for your automated meal management.

You will have three major other challenges to manage:

- recognize and manage (partial) occlusions, or other technical (CGM or BT related) obstacles (see [section 2](#) on pre-requisites of FCL, and related case studies)
- deal with times when the loop should be set "milder" as a precaution (e.g. nights; or in an exercise context)
- deal with times when insulin given by the loop must be restricted (e.g. snacks)

How big the remaining challenge is depends very much on your individual lifestyle. [Sections 5 and 6](#) discuss this in more detail.

In order to run the loop fully automatically around the clock, the times outside the meal blocks must also be precisely analyzed, and solutions to problems must be sought.

It is up to every user to decide where to draw the line. Defining and adequately tuning an Automation for occasional situations may or may not make sense, compared to the alternatives, like doing a manual override, accepting a few % higher time outside range for that day, "risking to having to take a snack", or temporarily resorting to the well-known hybrid closed loop.

5.1 Managing Time Blocks of Different Aggressiveness by setting an odd glucose target and/or w/ Automations

Personalized Automations tailor the loop exactly to your data so **fully automated handling** of time blocks with different aggressiveness of the loop can be made.

In setting up your FCL, you therefore now have another difficult and time-consuming job at hand, to define **automated** solutions for any of your „other“ situations, outside of meal management.

34

35 5.1.1 Using Automations to focus (or differentiate) FCL aggressiveness to (in) meal time windows

36

37 If, aside from meal management, you were rather happy in hybrid closed loop, you could continue
38 to run in that mode, and just focus your new autoISF FCL on management of meals (on all meals,
39 or only on a sub-set of them, like only dinners – which might make sense especially in your initial
40 transitioning phase).

41

42 For this, you define Automations

43

- 44 • that set **meal time windows** in which autoISF gets fully turned on
- 45 • or: that turn off autoISF (or just bgAccel_ISF off) in time windows in which surely no meal
46 occurs.

47

48 Other early DEV AAPS variants (see [section 13.3](#)) all work with meal-time windows. The window is
49 either set by time of day in the settings, or it always must be „set“ by the user via giving a
50 mandatory small pre-bolus before any meal starts. **Outside** of these time windows, these loops
51 then runs with less aggressive SMBs like oref(1) SMB+UAM in AAPS Master.

52 This mode is not really FCL, but an advance over traditional HCL that often achieves satisfying
53 degrees of automation and performance.

54 The term **Meal Announcement** (MA) is often used to label this closed looping mode.

55

56 5.1.2 Using odd-numbered profile targets (e.g. at night)

57

58 Ensure the even/odd logic in the settings is toggled on in Preferences> openAPS SMB>
59 autoISF settings> smb delivery settings>: "Enable alternative activation of SMB depending
60 on profile target" ON.

61

62 In time blocks with an odd-numbered profile target you can prevent any SMBs being given by your
63 loop. The (unchanged) aggressive settings can only translate within the limits set by %TBR
64 possible. This will very much slow down any more insulin being given.

65

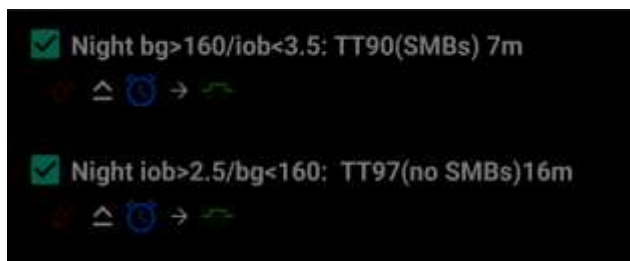
66 Notably it is an excellent solution to prevent getting too much insulin because of jumpy CGM
67 values, like after a compression low. This is therefore a good solution for night time.

68

69 Alternatively, you could use the new included options for Automation Conditions and
70 temporarily tune your bgAccel_ISF_weight much lower.

Yet another alternative would be to go into hybrid closed loop for the night, with or without SMBs.

In case you occasionally do have nights that would benefit from a couple of SMBs (to treat temp. highs from a late fatty pizza, raclette and such): Define suitable Automations like the two „night“ ones in this list:



Never underestimate the „trickiness“ of getting your Automations „right“.

Night data (with your thought-out Automations in place) need to be analyzed to see

- whether the bg and iob limits defined in the given example work sensibly
- whether the TT duration is chosen appropriately
- Swapping the sequence in which the automations appear in the automation list would also lead to different SMB impacts.

5.1.3 Using Automations setting an odd TT to reduce FCL aggressiveness

A widely used ACTION that strongly modifies how fast your FCL can add more iob is setting an **odd-numbered temp. glucose target** which makes the loop operate without giving any SMBs (%TBR modulation only).

Ensure the even/odd logic in the settings is toggled on in Preferences> openAPS SMB> autoISF settings> smb delivery settings>: "Enable alternative activation of SMB depending on TempTarget" ON.

So, from patterns you find in YOUR data, at times where you want your loop act differently, you need to carve out CONDITIONS that describe the respective situations (and either for how long it typically lasts, or at which *other* CONDITIONS you want your loop get back to default FCL operation).

From, autoISF 3.0 onwards, also the following parameters are provided as CONDITION and/or as ACTION for defining YOUR Automations:

- Enable ISF weights / Disable ISF weights => Allows temp. ON/OFF for the key ISF modulation parts of autoISF

105 • Trigger/set iobTH percent => Keeps default aggressiveness, but only until a modified iob
106 threshold is surpassed

107 • Trigger/set bgAccel_ISF_weight => Modifies the default aggressiveness

108 An odd TT is often set for an anti-hypo snack or sports snack. In both instances, you do not want
109 SMBs to quickly counter act.

110

111 In case of sweet “fun” snacks, this is entirely different -> next section.

112

113 5.1.4 Using Automations for a [DIY FCL cockpit](#): 1-button operation for treating “disturbances” e.g.
114 from snacks

115

116 Life in Full Closed Loop is easy if your lifestyle largely consists of real meals, and not much other
117 disturbances like from snacking in between. In [section 4](#). we dealt with major meals.

118

119 High carb snacks, sweets, consuming ice cream or having a sweet drink comes with the problem
120 of even steeper glucose rises, but overall a lesser insulin need, compared to major meals (for
121 which we tuned our FCL).

122

123 [Tuning aggressiveness](#)

124 Key is that I need even more aggressive FCL performance than for meals in my normal
125 spectrum of diets.

126 Therefore, I can set

127 • a higher **temp. profile%** and/or

128 • a temp.elevated **bgAccel_ISF-weight** (see screenshot of my Automation).

129 • a **low temp. target** (76 for instance); it additionally helps maximize the first SMBs
130 that will automatically be triggered at detection of acceleration.

131

132 When first defining and testing this Automation, also check:

133 • that the safety limits as discussed in [section 2](#) will not block the intended elevated
134 aggressiveness

135 • SMBs will not get outrageously big and iobTH sometimes exceeded by too much

136 Note that “the last SMB” is allowed to overshoot the valid iobTH by 30%

137

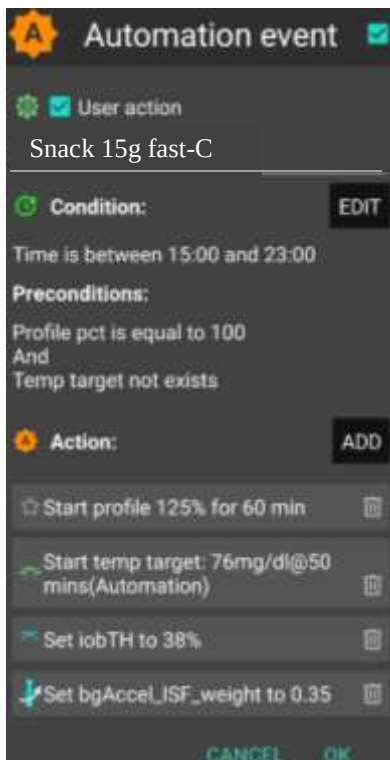
138

139 Limiting iob

140 For “just a snack”, insulin need will in total probably not amount to as much as for a meal.

141 If you would just have your sweet drink and your meal-oriented FCL would “attack”,
142 iob likely would become too high, and a glucose rollercoaster would start, with you
143 needing to consume more =>

144 If you just have a snack, or drink a glass of juice, you can lower the **iobTH_percent**
145 accordingly.



„User action“ is always ticked-on

This will, in the defined time space ..

..offer the “DIY cockpit” button..

..which I must press any time (~90...30 minutes) before my snack.

Note: Make sure that iobTH and bgAccel_ISF_weight revert to default afterwards



146

147 So, this is a little extra “project” when setting up your FCL. You need to research your
148 snack habits (if any), and over time find out which settings in the snack-related Automation
149 work well.

150

151 In everyday life you then just must press the related button in your cockpit (which is not
152 time critical at all, except it should be clicked latest a couple of minutes after you took the
153 drink or snack).

154 If you consume more, and also eat something with your sweet drink, this will more
155 resemble a full meal... however, with unusual amounts of fast carbs. So you still
156 profit from the more aggressive modulation regarding %profile and bgAccel_ISF, but
157 in that case, you might keep the full default set iobTH_percent, or even elevate it
158 (and label your Automation, and button, differently).

159

160

161 Installing the DIY cockpit button

162

163 In the related Automation, just keep the “User action” box clicked at all times, and define in
164 the Conditions when you want to see that button available for cockpit use (see screenshot
165 above) => you will see that button offered.

166

167 Besides snacks, also any other recurring special situations can be addressed via a cockpit
168 button, and receive different aggressiveness up to a suitable iobTH level.

169

170 FCL cockpit

171

172 In the future you might be able to set the stage for a snack and other “disturbances” also
173 via an extended menu below the TT button on the AAPS home screen, see [section](#)
174 [5.2.3.1](#)

175

176

177 Discussion

178

179 If I had *regular* snacking habits in certain parts of day, I might take an **alternative** route
180 and **modify my FCL settings in those time slots** to run automatically upon acceleration
181 detection.

182

183 Yet another **alternative** would be to temporarily leave the FCL mode and handle the sweet
184 snack or drink “the traditional way” in **hybrid closed loop**.

185 The suggested FCL cockpit user interface with an extra version of violet loop on the AAPS
186 home screen facilitates that, including automatic removal and re-appearance of the insulin
187 button at the bottom of the APS home screen.

188

189 As mentioned in section “Limiting iob” above, it is essential though to either avoid snacks,
190 or select one of the discussed easy ways to deal with them in everyday life.

191

192 5.1.5 Activity Monitor

193

194 If you choose to make use of your smartphone’s **stepcounter**, you can (automatically)
195 adjust insulin sensitivity ratio to activity level in the past minutes to one hour time frame.

196 This is another little tuning opportunity, in which you study your body's response to light
197 exercise (like walking) or to not moving at all (like desk, couch), and select appropriate
198 settings which, in the future, will automatically adjust insulin delivery to suit activity state of
199 the past minutes (up to 1 hour).(AAPS Preferences/OpenAPS SMB/Activity modifies
200 sensitivity/ -> set two scaling factors.)

201
202 This autoISF feature (new since V.3.0) is much quicker responding than Autosens or
203 dynamicISF to adjust insulin sensitivity to your current „lifestyle state“.

204
205 More see [sections 3.5](#) and [6.5](#)

206
207 [5.1.6 Completely hands-off Full Closed Loop?](#)

208
209 Remaining 24/7 in a „hands-off“ FCL can be a realistic goal with autoISF 3.0 if special challenges -
210 as discussed in [section 5.1](#), were analyzed and addressed.

211
212 Clearly it depends very much on your lifestyle, and how interested, willing, and capable you are to
213 recognize, deal with, (and in the future avoid?) situations that get you outside of your desired %TIR
214 on occasion.

215 So, this is also about what %TIR you are aiming at, and can accept, as it averages out for
216 the week, for instance.

217
218 Even if a principal capability for a fully automatic running FCL is given, this still
219 means that

- 220 • the user should be knowledgeable about what exactly is going on, and
221 • has a capability to „nudge“, or even to take over.

222
223 In [section 5.2](#) that immediately follows, we discuss the options the (largely not yet available) **FCL**
224 **cockpit** on the AAPS home screen gives you, to occasionally tweak your FCL aggressiveness,
225 should you see a need to do that.

226
227
228

5.2 FCL Cockpit: AAPS home screen as primary access point for modulating aggressiveness in daily use

Note: autoISF 3.0 is an early dev variant of AAPS, and as user you are participating in an on-going development. Of note, **autoISF 3.0 is first launched without many of the described cockpit features that are presented below in this font color.**

For the time being, multi-step work-arounds may become necessary

- In many cases, going into AAPS Preferences and changing settings would be needed (...plus not forgetting to change these settings back, afterwards).
- Automations allow a DIY FCL cockpit, see [section 5.1.4](#) and [case studies 5.2](#) and [6.2](#)

This is also an open invitation for you to contact us in case you could help program a module for one of the required user interface extras.

For future integration into AAPS Master, an eye should be kept also on the question which other modes (like FCL using Automations, or dynamicISF etc.) might benefit from some of the extra features.

The loop can run fully automatically without any user interaction (after the initial tuning phase, and related settings made in AAPS /preferences/SMB/autoISF).

But, just like in the airplane cockpit: Cruising in full auto mode should involve having an eye on the instruments, and on potential disturbances ahead in the environment.

E.g.: storm ahead => instruct your plane to climb to another flight height.

Analogy: exercise ahead => setting an exercise TT, or => pressing a button that activates a sequence of instructions (some of them probably hinging on conditions, like actual iob) how to manage through that exercise situation).

So, for the occasional „disturbance“ coming up, you should find an easy way to

- call up a pre-programmed routine for automatic management, with auto-adjusted aggressiveness, or:
- tweak a setting or two, to temporarily adjust the aggressiveness
- There may also arise a desire to just exit the FCL mode, and be your own captain for mastering a special situation.

All this is facilitated within seconds right from the AAPS home screen's **cockpit features to the extent they are already incorporated**, or to the extent you can build alike DIY cockpit features via Automations, as described in [section 4.1.3](#) and [case studies 5.2](#) and [6.2](#)):

266

- 267 • The button that is integrated into the **violet FCL icon** serves as emergency off button, to
268 quickly stop FCL, or to at least to immediately stop any more SMBs (...just for a couple of
269 minutes, or for the remaining meal time: pick from the options offered with just one
270 keystroke).

271 Via the violet FCL icon on your AAPS home screen, you also can access a temp. switch-off
272 button for SMBs (see section that next follows below).

273

- 274 • The **three top fields** (%profile, exercise, TT) provide access to temp. tuning of core
275 parameters, and/or to some pre-programmed routines.

276 Taken together with some **new indicator fields** about your loop state, and the **grey DIY cockpit**
277 **buttons** this makes the AAPS home screen your **cockpit** for Full Closed Looping.

278

279 Let us look on each of these cockpit elements in some detail:

280

281 5.2.1 Violet FCL icon and underlying buttons

282

283 Novices to FCL, or really anyone running into a very special situation, may appreciate that the new
284 closed loop icon on the AAPS home screen in pink (for FCL) has buttons to quickly shut off getting
285 more SMBs (1st row), or to enter other loop modes (second row).

286

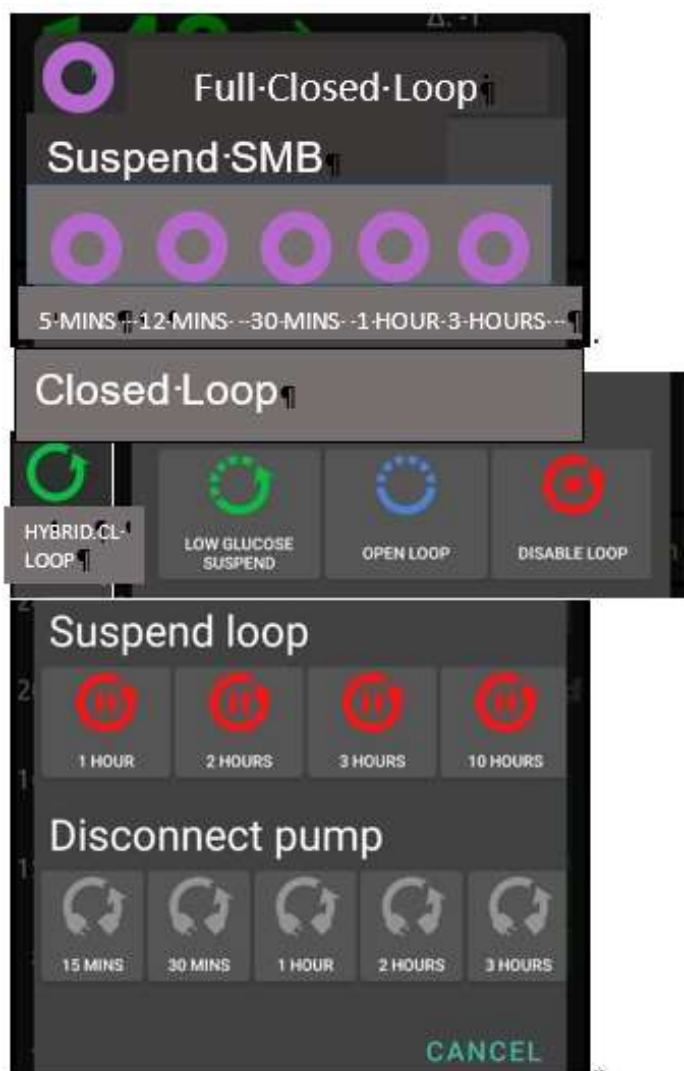
287 It functions very much as the other ones that you know from HCL already, and in fact you
288 get offered some of the same options (for instance, to switch the (full) closed loop off for 15
289 minutes for going to take a shower)

290

291 Note that in FCL you leave all BG regulation, notably against meal spikes, to the loop. So, try not to
292 disconnect in phases when your FCL must ramp up your iob.

293 The required insulin would still be supplied *after* you reconnect. However, without the user
294 pre-bolussing, the delay would be more of an issue in FCL than it had been in HCL.

295
 296 Just pressing on the FCL icon, a dialogue box comes up:



<-add-arrow, form-like-like-CL-Loop...¶

<-dotted+arrow, form-like-like-LGS...¶

DEV: when in Hybrid-Closed-Loop = top headline + green circle, there is no Suspend SMB part but it starts right with „Closed-Loop“. In that screen. There, the 1st element must be option to pick ¶

.....pink circle, FULL-CL-LOOP ¶

where here the green HYBRID-CL-LOOP stands ¶

For loopers who did not set up FCL, a feedback must come up ~ „FCL not installed“ if they press on that button ¶

297
 298
 299 Pressing „**Suspend SMB**“ provides fast and easy „emergency braking“ regarding delivery of more
 300 SMBs:

301 Select the one with the desired number of minutes: 5 or 12 for just blocking the potential next
 302 SMB(s), and up to 3 hours to manage the entire rest of this meal with %TBR from then on.
 303 Whenever, and whenever, your FCL is in „no SMBs allowed mode (e.g. automatically after
 304 surpassing an iobTH also, or might be triggered by an odd TT), the FCL icon will turn into a dotted
 305 one

306 Instead of remaining **duration to end time** it indicates in the middle „the condition“, „**iob**“ or „**TT**“
 307 Add an indication if suspend SMB comes from an Automation, e.g. add an „**(A)**“, **underneath** the
 308 #minutes, iob, or TT in the middle of the dotted violet field.

309 So, as in other (already in HCL existing) cases, those icons show in the middle the minutes left that
 310 they will be running, or the condition which would have to go away for this temp. setting to stop.
 311 It always auto-reverts into the FCL state and FCL icon, when time (or other condition) has elapsed.

312 Pressing „**HYBRID CL. LOOP**“ or other buttons from the 2nd row provides fast and easy
313 „emergency exit“ into other modes.

314 This enables beginners an easy „temp. escape“ into their well-known HCL (green) at any
315 point of time. bgAccel_ISF_weight is set to zero when going FCL->HCL. HCL can run with
316 autoISF (for instance dura_ISF) uninhibited otherwise. (check implications for HCL users of
317 autoISF ??).

318 Note: These options from row 2 have no time limit. Loop will **not** by itself go back to FCL. You see
319 the different loop icon as a reminder to manually revert, when ready.

320

321 5.2.2 Buttons „Insulin“, „Calculator“ etc at bottom of AAPS home screen

322

323 These buttons are **not useful any longer in FCL**, and automatically disappear whenever in FCL
324 mode (also in Suspend SMB state), and re-appear when leaving FCL. This applies also when an
325 Automation or technical system failure shut off FCL.

326 Users who, maybe in the beginning phase, feel better having those buttons, can override
327 the removal (of the insulin button, or any other) by going into /preferences/overview/buttons
328 and forcing them on. They only remain on until the next re-entry into FCL mode, when auto-
329 off happens again.

330 The reason why we do this: It really is important to let the loop loop, and not interfere more
331 than absolutely needed. Any bolus the user gives will sure distort the bg curve, on which
332 autoISF, especially when aggressively tuned for FCL, builds a lot of its decisions!

333

334 5.2.3. Three top fields (%profile, exercise, TT)

335

336 Depending on the variedness of lifestyle, the desired %TIR, and the initial tuning effort put in, the
337 user may want occasionally to „tweek“ the aggressiveness of her/his FCL.

338

339 The top 3 fields (grey in default mode, **yellow when temp. in mode with changed**

340 **agressiveness**) serve as quick and easy entry points to make temp. switches (as users will be

341 used to for %profile switches, or for setting an EatingSoonTT in HCL, .. which they still can do in

342 FCL ... but more:)

343

344 Expert FCL users might need this feature rarely, but probably at least to manage activity after
345 meals: Each require opposite aggressiveness, and the switch has to come in a certain point in
346 time that would be difficult to capture. (More see [section 6.4](#))

347

348

349

350

351

352 5.2.3.1 TT dialogue field ((Currently not available in the pictured form and function !)

353 *f extended design for FCL cockpit is already launched)*

354 The TT field (top right of AAPS home screen) is the primary daily interface, and a dialogue field
355 opens when pressing on it

Initially, the form can be entirely empty re. TT inputs and just show the default iobTH and bGAccel parameters.

Two lines appear for target and get labeled ES, AC or HY depending on what was pushed at the bottom buttons. -- (HY => red frame; evtl. 1. empty => grey)

TT entries can be made or overridden.

iobTH calculates from Target AC and other settings shifts away from default set in /preferences (here 0.7) but could be overridden here 0!..200 % is allowed

bGAccel ISF_weight can be modulated here, too. Note: it can change again if % profile is also changed. -- 0...200 % is allowed

CANCEL allows to start fresh (select one or two of the square buttons, ES, AC or HY)

OK needed to use the settings

Duration input is made in minutes. In the exceptional case that both, ES and AC targets are defined, the duration input is pr AC and framed blue. (This is because the preceding AC mode is automatically determined in length by the loop observing when iobTH is exceeded)

356

357

358 This looks complicated but only because it allows 4 different modes of use. Each user will primarily
359 use her/his preferred one.

360 (1) Who is happy with the initially well tuned FCL and does not have huge variations in daily eating
361 and moving around, will **not use** the TT **at all**. FCL is possible without an intervention via the

362 TT button in your cockpit. Actually 4 of 8 modes (GGG ...YYY permutations, list see [section](#)
363 [5.3.1](#)) are not making use of TT.

364 (2) Super easy is also, to just input **any odd-TT** (odd-numbered temporary target) that will shut out
365 any SMBs for the set duration. *That can be a good idea when having a snack, for instance.*

366 Super quick access to stop SMBs is possible also via the loop icon ([section 5.2.1](#)).

367 Specifically, an **EatingSoon TT** can be activated here (limited relevance see [section 2.5](#)). It is
368 time-un-critical, can be manually set, or come up via an Automation.

369 The cockpit enables you to set the iobTH differently (override) for the current meal.

370 Alternatively, iobTH can be temporarily changed in /preferences or using an Automation.
371

372 Temp. iobTH will always revert to default when the TT expires. If another TT immediately
373 follows, like in the example of the screen above, it will calculate, (then) show and use a new
374 temp. iobTH.

375 (3) The third way is to **use the input mask** (*if already ncluded in your software version* see picture
376 above) **to freely modulate the loop aggressiveness** for a declared number of minutes. Click
377 the bottom big square(s): Either HYPO, or ACTIVITY, or EATING SOON, or ACTIVITY and
378 EATING SOON (*example in the pictured screen above*). Make or override entries in the offered
379 fields. Press OK.

380 (4) The fourth way is to exclusively use one of the 4+4+2 little buttons seen in the bottom part of
381 the TT dialogue box (*if already included in your software version*). They provide a set of
382 settings (as will immediately show in all input fields above) that the user has set up in
383 Preferences/SMB/autoISF/FullLoop (refer to [section 6.3](#)), and can freely label there. *For*
384 *instance „hiC“ at high carb EatingSoon, „piz“ for Pizza/fatty meals, „grd“ for garden work,*
385 *„mtb“ for mountain biking ...*

386 **Capturing good settings for not-everyday situations in /preferences** (*if already included*)
387 **allows calling them up within 1 second**, from your cockpit on the AAPS home screen (...and
388 won't ruin the FCL experience at all , especially because in most cases it is not time-critical,
389 how long before the intended exercise the buttons are pressed).

390 [Case study 6.2](#) demonstrates that nearly the same performance and comfort can be reached
391 via the **DIY FCL cockpit** with the grey extra buttons appearing at the bottom of the AAPS home
392 screen, based on Automations with User action (see also [section 4.1.3](#)).

393 The example picture given above, and also [case study 6.2](#), is the most complicated (but also most
394 useful) case, **when exercise follows after a sizeable meal**. It is then that you need (a) aggressive

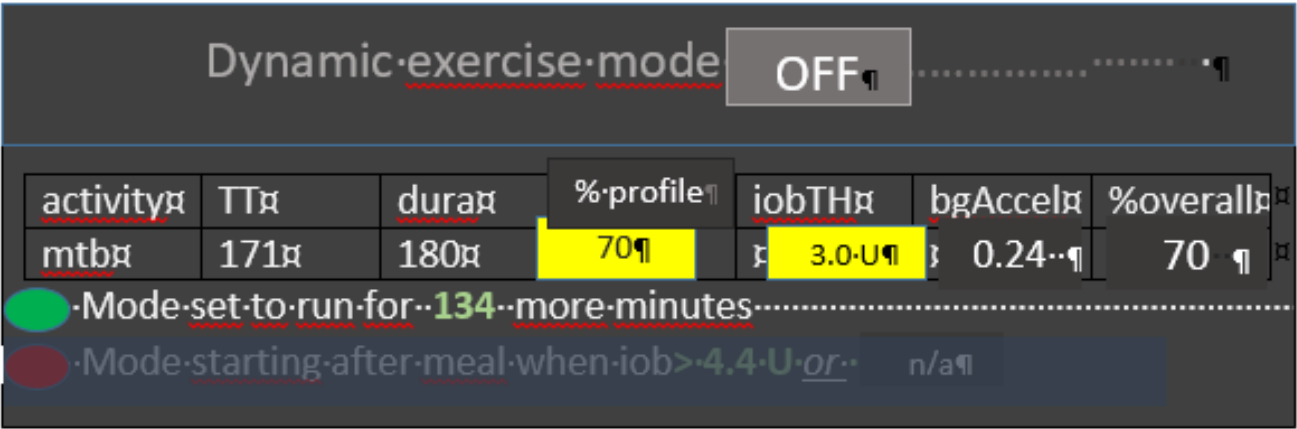
395 FCL initial performance at the meal, but, exactly when (!) a (for the intended sport already
396 temp.lowered) iobTH is exceeded, you need (b) to have SMBs automatically switched off and go
397 into the „milder“ mode, as defined for the exercise (with high instead of lowTT, that automatically
398 significantly reduces iobTH again, and insulin sensitivity(resistance) settings too).
399 Pressing exercise related buttons will automatically also light the **exercise button** on the main
400 screen yellow.

401
402 To summarize, the TT dialogue field offers easy but powerful ad-hoc modulation of loop
403 aggressiveness for FCL (if already included).

404
405 5.2.3.2 Exercise button (see more in [section 6.](#))

406
407 The exercise button automatically lights yellow when exercise related TTs are activated in the TT
408 dialogue box. 4 of 8 modes are making use of the exercise button.
409 If pressing on the exercise button, a dialogue box appears (if extended design for FCL cockpit is
410 already launched) with info on exercise setting first (and opportunity to override), plus below the
411 activity monitor (experimental for auto-tracking of lighter movement during the day, and effects on
412 sensitivity that may have. See [section 4.5](#)).

413
414 So, first the exercise settings (as set under TT) are there to read. Example :



415
416
417 The exercise (here mtb) is selected in the dialogue box of the neighboring TT field, and there auto-
418 filled with settings made in the set-up and tuning stage by the user under preferences (see
419 above,...). They are reported also under the exercise button here, and TT, duration, and % sens
420 (which also shows active on the %profile field on the left side of the exercise button) can be temp.
421 changed there. iobTH, bgAccel_ISF and overall resulting sensitivity ratio is given in the other fields.
422 The **middle field** of the table, „% profile“ either picks up the % set under the %profile button, or
423 an input can be made here, in the exercise button domain, which will:

- 424 • turn the neighboring %profile button on yellow and show that inputted % on it, too
- 425 • be multiplied with the result from the exercise mode settings per se, and change the %
426 overall, accordingly.

427 So, if this middle field of above table (dialogue box of sports button) contains a figure other than
428 100, input field becomes yellow, and you are operating with a combination of traditional PLUS new
429 exercise mode (with all three top buttons of your FCL cockpit yellow). This maximally will soften
430 aggressiveness, for which you get an idea by the last calculated figure.

431

432 The mode is either running already (for another number of minutes, as probably also shown in the
433 yellow TT field anyways). Or it is scheduled to run, after insulination for a started meal reaches
434 iobTH (as in table). Or, no exercise is scheduled (both points red, no entries).

435
436 The lower part of the exercise dialogue box (not pictured above, but see in [section 6.5](#)) is
437 dedicated to the Activity Monitor

438 439 5.2.3.3 Profile button

440 The profile button can still be used to set a different profile, or profile%, for instance to adjust for
441 days with sickness (as you are used to from hybrid closed looping). 4 of 8 modes are not making
442 use of the profile button.

443
444 Any inputs made here will be used to modify profile_ISF on which all further changes are made on
445 (multiplied with).

446
447 The profile field remains grey if standard profile is applied.
448 It turns yellow, displaying a %figure relating to any altered loop overall aggressiveness:

- 449 • When no inputs (changes from 100% profile) are made here, but inputs in the TT field,
450 e.g. for exercise, automatically lead to different insulin sensitivity ratio ~~that ratio is shown~~
451 here
- 452 • when% is changed by input in the profile button itself, it will be multiplied with with
453 profile_ISF and be used in place of profile_ISF *by the algorithm*.

454 However, for exercise (sports) you no longer must make an entry here, because
455 reasonable %reductions should be automatically provided, driven by your set TT (and half-basal
456 exercise target), see [section 6](#).

457 458 5.3 Recognizing your loop state in the AAPS home screen

459 460 5.3.1 Color scheme of top cockpit buttons tells kind of closed loop that is running

461 3 Buttons (%profile; exercise; TT) each in 2 states (yellow Y, or grey G) makes $2 \times 3 = 8$ possible
462 combinations:

463 GYY = dynamic exercise mode

464 YGY = not-dynamic „traditional“ exercise mode (if <100%) or hypo mode (if >100%)

465 GYG = basic closed loop with Activity Monitor running

466 GGG = basic closed loop (FCL or HCL) without any altered sensitivities etc

467 YGG = basic closed loop but with a „long wave“ sensitivity shift (e.g. sickness)

468 GGY =temp. target like e.g. EatingSDoonTT is set; or Hypo mode

469 YYG = closed loop with „long wave“ sensitivity adjustment and Activity Monitor running

470 YYY = dynamic exercise mode in time with additional „long-waved“ sensitivity shift

471

472 5.3.2 Information printed on the top buttons

473

474 The yellow TT field shows the currently valid TT (and further duration):

475 (profile) stands for the abbreviation you labeled your selected running profile



477 In the special case of settings for meal preceding sports, the field will look slightly differently:



...and ...

479 ... when iobTH is first time exceeded, this automatically switches to:



481

482 Likewise, if on the AAPS main screen just an **EatingSoonTT** is set (e.g.72), this is entered with the

483 desired duration. Afterwards, it automatically reverts to profile target and the display turns grey

484 again there with e.g. 90 on it (and no time limit).

485 Without sports context, the middle field remains grey.



487

488 Independently from setting a TT, the user can choose to set a %profile in the left top field, for an

489 independent number of minutes, e.g. 70% in this screen example: Also, or additionally, this will

490 influence the resulting ISF and sensitivity%

491



492

493

494 The % might change and turn yellow also in context of making TT inputs in the related dialogue
 495 box (see chapter TT dialogue field, above). Still, the % (or the length of time the profile switch shall
 496 be active) can be independently overridden in the top left field, if so desired.

497

498 If an **Automation** sets a %profile, and/or a TT (e.g. *automatic detection of meal start at condition*
 499 *e.g. when delta >10*), this would automatically show in respective field(s) turning yellow and
 500 showing the temp. setting. To show the set parameter comes from an Automation, „**(A)**„ is added
 501 in the end of button text.

502 Note that an Automation is **usually/ always (?)** only permitted to temp. change default profile
 503 settings, not other pre-existing temp. settings. This is for a good reason : Why should a
 504 sometimes in the past thought-out Automation supersede your - just for the occasion
 505 specified – temp.settings that you consciously activated for the day?

506 Advice: Try to stay away from Automations that also aim at temp. modifying
 507 aggressiveness. For the reason just given in above note, they often will not kick in anyways.

508 Generally, it also is no good idea to double up sub-algorithms for tweaking loop behaviours.

509

510 Try to **keep things as simple and clear as possible.**

511

512 That said, a limited number of Automations can be of help in distinct scenarios (that differ in
 513 purpose and in applicable time of day).

514 A good one could be for night time, when your odd profile TT has SMBs shut off, but your
 515 experience after pizza nights tells you that, under certain condition patterns (bg, iob), an
 516 SMB or two should be „allowed in“. Another good example, if you go usually FCL without
 517 any use of the TT button (which you could call a meal announcement of sorts), is to define
 518 an Automation that, after detecting a meal start, automatically sets a low TT to get
 519 maximally aggressive first SMBs.

520

521 5.3.3 FCL related indicator fields in the AAPS home screen

522

523 In extra data fields of the AAPS main screen you can always see (not change) the key
 524 „aggressiveness“ parameters your loop currently operates with (see also home screen
 525 example below):

- 526 • how profile sensitivity (**ISF**) changes by the %profile input, by autoISF, and/or a set
527 exerciseTT.
- 528 • next to current available iob number is an indication of your **valid iobTH** (the iob above
529 which no more SMBs will be given)
- 530 • The AAPS home screen additionally shows, above the deltas, the current **acceleration**

532

533 5.3.4 Overall home screen:

534

Overall home screen:



fields => temp. modulated sens.

are additionally: acceleration-factor

< - Violet < - > green circle for FCL < - > HCL
dotted if SMB off

<- % reduced insulin supply... because of resulting...

< - higher (weaker) ISF

< iobTH

<- buttons „bolus“ „carbs“ etc. eliminated

(auto- re-appearing when violet \rightarrow green loop)

535

536

537