Blood glucose changes and adjustments of diet and insulin doses in type 1 diabetic patients during scuba diving (for a change in French regulations)

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SUMMARY

Objective: In France, diabetic subjects were not allowed to dive. The principal risk is hypoglycemia during immersion. However scuba diving is allowed in many countries. To follow blood glucose changes, food intake and insulin adjustments in type 1 diabetic patients when diving, and to propose specific guidelines for such patients willing to practice recreational scuba diving.

Methods: Fifteen well-controlled (mean HbA₁c: 7.2 %) type 1 diabetic patients without complications were volunteer to dive under strict medical monitoring. They dove 8 times in 4 days in autumn at a depth of 20 meters, in 12°C to 16°C water. A strict protocol based on blood glucose was implemented to prevent hypoglycaemia.

Results: No case of hypoglycaemia was observed and no faintness was reported underwater. Mean blood glucose before diving was 200 mg/dl (11 mmol/l). There was a mean fall in blood glucose of 40 mg/dl (2.2 mmol/l) during dives, a mean decrease in daily insulin doses by 19.3% on the last day. Daily energy intake was 3 225 Kcal in average. A continuous glucose monitoring (CGMS) was performed in one patient and showed a rather stable glycemia during immersion but a decrease within the 8 hours after.

Conclusion: When respecting a strict protocol to prevent hypoglycaemia, the risk of hypoglycaemia appears quite low. We recommend an ideal glycemic goal of 200-250 mg/dl (11-13.75 mmol/l) before immersion, a higher reduction of insulin doses (-30%) and to taking carbohydrates on board in any case. The present data have recently led the French diving federation (FESSM) to allow type 1 diabetic patients to dive with some restrictive qualification requirements: dives within the "safety curve" (no decompression curve), in above 14°C water, depth limited to the median space range (6 to 20 meters), plus mandatory guidance by a diving instructor.

Key-words: Scuba diving · Diabetes · Restrictive qualification · Continuous glucose monitoring.


SUMMARY

Objectif: En France, les diabétiques n’étaient pas autorisés à plonger. La raison principale est le risque d’hypoglycémie en immersion. La plongée est cependant autorisée dans de nombreux pays. Le but est de suivre les modifications glycémiques, les ajustements alimentaires et les traitements insuliniens chez des diabétiques de type 1 en plongée sous-marine, et proposer des recommandations spécifiques pour la plongée.

Méthodes: Quinze volontaires, diabétiques de type 1 sans complication, bien équilibrés (HbA₁c moyenne = 7.2 %) ont réalisé huit plongées à 20 mètres de profondeur en quatre jours, en automne, dans une eau entre 12 et 16°C. Un protocole strict fondé sur des contrôles glycémiques capillaires a été mis en place pour prévenir l’hypoglycémie.

Résultats: Aucune hypoglycémie ni aucun incident n’ont été relevés sous l’eau. Le relevé des glycémies capillaires et des prises alimentaires indique une glycémie moyenne à 200 mg/dl (11 mmol/l) avant immersion, une baisse moyenne de 40 mg/dl (2.2 mmol/l) après la plongée, une diminution moyenne des doses d’insuline de 19,3 % le dernier jour, et des ingesta moyens de 3 225 Kcal/jour. Une mesure en continu de la glycémie (CGMS) a fonctionné chez un patient en immersion et montré dans ces conditions une bonne stabilité des glycémies pendant les plongées, mais des baissess glycémiques dans les 8 heures suivantes.

Conclusion: En respectant un protocole strict de prévention d’hypoglycémie, le risque d’hypoglycémie est faible. Nous recommandons une glycémie avant la mise à l’eau entre 200 et 250 mg/dl (11-13.75 mmol/l), une baisse plus importante des doses d’insuline (de 30 %) et une prise de glucides à bord avant la plongée. Un protocole d’immersion et des propositions d’aptitudes restreintes à la plongée loisir chez le diabétique traité à l’insuline ont été validées par la fédération française de plongée (FFESSM). Les restrictions proposées sont : plongées dans la « courbe de sécurité » (sans palier de décompression), plongées dans l’espace médian (6 à 20 mètres), dans une eau à plus de 14°C et accompagnement par un moniteur.

Mots-clés : Plongée sous marine · Diabète · Aptitudes restreintes · Surveillance glycémique.

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Until now, the French Scuba Diving Federation (FFESSM, Federation Française d’Etude des Sports Sous-Marins) did not allow insulin-dependent diabetics to dive. The main risk, somewhat justified, is the occurrence of hypoglycemia during immersion. Hypoglycemia is underwater difficult to diagnose and to treat, and the risk of drowning cannot be discarded. However, no objective data to assess this risk has ever been published [1, 2], and by reading all available diving incident reports we could not find any cases of incidents caused by the diabetic condition itself [3, 4]. Furthermore, the management of diabetes has made so much progress, particularly regarding the education of diabetic people, that certain prohibitions have been withdrawn. Truck driving licenses, for example, are now accessible for certain diabetic subjects. Running a marathon and practicing sports at a high level are permitted, and scuba diving is allowed in the United States by DAN (Divers Alert Network) [5]. In the United Kingdom with BSAC (British Sub Aqua Club) has more than 20 years of experience with diabetic divers [6] and many other countries such as Austria, Germany, Denmark, the Netherlands, Egypt, Australia, Cuba and Saudi Arabia allow diabetics to dive. However, scuba diving is still forbidden in Portugal, Belgium and Spain. In all these countries accidents occurring because of diabetes have not been reported, nor has it been reported that diabetic subjects suffer from decompression illness more frequently than other divers or have more micro- or macroangiopathic complications [3-10].

As reported by Dear at the 1996 UHMS (Undersea Hyperbaric Medical Society) meeting, DAN collected from 1989 to 1994 a total of 550 diving deaths reports, among which 7 concerned diabetic people, and 2 400 decompression accidents, of which only 8 concerned diabetic patients [10], which is in line with the general population and doesn’t show an excess of risk in diabetic patients.

In France, scuba diving is strictly forbidden to diabetic patients (except those treated by only metformin). This ban leads to extreme reactions, and testimonies left on the Internet suggest that many diabetics are actually hiding the fact they are diabetics in order to dive. This risky situation led the regional commission of the FFESSM to consider that rigorous medical data were required to keep or change its position regarding type 1 diabetic patients, and to encourage and support our process.

Our aim was to follow blood glucose changes, food intake and insulin adjustments in type 1 diabetic patients when diving, and based on the present data to propose specific guidelines for such patients willing to practice recreational scuba diving.

**Patients and methods**

**Clinical Characteristics of the diabetic divers**

Fifteen type 1 diabetic volunteers, twelve males and three females, were willing to dive with a strict medical monitoring. They were an average 40 years old (range: 28-55) and had been diabetic for an average of 9 years (range: 1-30). They were well-controlled (HbA1c 7.2% range: 5.8-8.3), none had micro or macroangiopathic complications. Each participant knew how to detect and treat their hypoglycemia (confirmed by a letter from their diabetologist), and none had had a severe hypoglycemia episode for one year.

**Insulin treatment**

Twelve had a basal-bolus treatment, one had an external pump, one had a three-injection regimen (fast-fast-premixed) and the last one a two-injection regimen of premixed insulin. The average initial dose was 0.66 IU/kg/d (range: 0.33-0.83 IU/Kg/d). The other treatments consisted of statin (n = 2), allopurinol (n = 1) and metformin (n = 2).

**Scuba diving level**

Eight diabetic divers were beginners and had taken a beginner (level 1) course in a swimming pool for four months, the seven others had already obtained a diving certification before becoming diabetic: three were one star divers, three were two stars divers, and the last one was an instructor (MF1 — two stars CMAS). Only 2 of them were actually experienced divers, all others were considered as novice.

**Conditions of the experimental dives**

Two dives a day for 4 days (total 8 dives) were planned at a depth between 15 and 20 meters (50 and 66 feet) during 30-40 minutes, water temperature was between 12°C and 16°C (53.6°F to 60.8°F). Dive gear consisted of 12-liter steel tanks, at a service pressure of 200 bars, and 5 mm or 7 mm wet suits. The medical staff included five diabetologists, one hyperbaric specialist, and one nurse. The scuba diving staff included nine federal instructors. One of the diabetologists was a CMAS 2-star instructor.

**Procedures for preventing and treating hypoglycemia, and immersion protocol**

**Prevention of hypoglycemia**

A detailed protocol for the prevention of hypoglycemia was developed and implemented on board (Tab I). For each dive, every diabetic diver was assigned an instructor from the diving crew, and granting permission for immersion depended on the approval of one of the medical doctors on board, who was designated beforehand. The medical staff coordinated and assessed the capillary blood glucose levels taken on board. Approval for immersion was given only when the blood glucose goals were observed.
Treatment of hypoglycaemia

A special procedure for hypoglycaemia was designed, explained on the boat, and rehearsed before every dive. A specific hand signal for hypoglycaemia indicated that the dive was to end immediately, with ascent to the surface at the appropriate speed (15 meters per minute) with or without the help of an instructor, and intake of sugar after surfacing and before boarding the boat. All diabetic divers and instructors had sachets of Glucodose® and condensed sweet milk in their jackets.

Insulin doses

The insulin doses were adjusted every evening during meetings between the diabetic divers and the medical staff. The diver with an insulin pump removed it for the duration of the dive (40 min) and put it back afterwards.

Measurements

Capillary blood glucose strip tests

Capillary blood glucose was quantified with Accucheck Active® (Roche diagnostics, Basel, Switzerland) and ketonemia with Medisense Optium® (Abbott, North IL, USA). A glucose sensor, ref. MMT-7002 (Medtronic, Northridge, USA), was inserted subcutaneously in the abdomen after shaving, and taped in place with an Opsite film. The CGMS was placed in a 83 mm diameter casing made of PVC, bearing a handle and two plugs, one for the bottom and the other for the opening, with the CGMS wire passing through a stuffing box. The assembly was glued tight, with glue for rigid PVC and cyanoacrylate glue for the stuffing box. The system worked for three nights and two days during which four dives were carried out.

Air consumption

Each diver was compared to the other members of his diving crew.

Food intake survey

Carbohydrates taken on board were recorded by the doctors and the nurse. All the meals taken while not on board were carefully recorded on questionnaires by the diabetic divers (the meals were the same for all), and nutrient intakes were analyzed using a specific software (Bilnur®; Cerelles, France).

Measurement of body composition

This was done every evening before dinner with the TANITA 300 GS impedancemeter (frequency and intensity of the current 50 K Hz/500 mA).

Statistical analyses

We expressed the data as means ± SD. After controlling the shape of data distributions we computed the equation of the linear regression of blood glucose changes on carbohydrate intakes. Furthermore we computed quadratic equations of 95% confidence interval (CI) lower and upper bounds for mean and individual values. All probabilities were two-sided, with a P value < 0.05 considered statistically significant. We performed the statistical analysis using SPSS 12 (SPSS Inc, Chicago, IL, USA).

Results

General events

Ninety-five of the 120 planned dives actually took place. According to the protocol, two dives were not permitted due to a too low capillary blood glucose level and one due to positive ketonemia before diving. One diver developed a barotraumatic ear infection on the third dive and was unable to dive again. The other 17 dives were canceled because of environmental conditions, with sea-sickness and vomiting for 5 of them.

Table I

<table>
<thead>
<tr>
<th>Blood glucose mg/dl (mmol/l)</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>160-250 (8.8-13.75)</td>
<td>Immersion permitted</td>
</tr>
<tr>
<td>120-160 (6.6-8.8)</td>
<td>Intake of 15 g of carbohydrates (^1) and then immersion permitted</td>
</tr>
<tr>
<td>&lt; 120 (6.6)</td>
<td>Intake of 30 g of carbohydrates (^1), followed by a test 15 to 30 minutes later and then immersion permitted if blood glucose &gt; 150 mg/dl (8.25 mmol/l)</td>
</tr>
<tr>
<td>&gt; 250 (13.75)</td>
<td>Ketonemia checked: if 0, diving allowed, and if found, the dive was canceled.</td>
</tr>
</tbody>
</table>

\(^1\) Carbohydrate equivalence: 15 g is equivalent to a cereal bar, a glass of soda, 3 dates, 3 figs, a mini-chocolate bar or a 5 g sachet of glucose (Glucodose®, Cegipharma, France).
**Blood glucose variations**

No case of hypoglycemia was observed and no faintness was reported underwater. Ten hypoglycemic episodes occurred when the divers were off the boat. All were minor, and managed by the patients.

More than 600 capillary blood glucose tests were carried out on board. Some blood glucose measurements could not be performed on time. Therefore, data from 87 dives are available as described below. Blood glucose levels just before immersion were between 89 and 365 mg/dl (4.89-20.07 mmol/l). Just after reboarding the boat they were between 52 and 275 mg/dl (2.86-15.12 mmol/l). There was a mean decrease in blood glucose of 40 mg/dl (2.2 mmol/l). Carbohydrates (15-155 g; mean 50.5 g) were taken before 43 dives (50%). The blood glucose changes during the dives were correlated with the carbohydrate intake on board ($r^2 = 0.73; p < 0.001$) (Fig 1). For these 43 dives the equation of the linear regression of blood glucose changes ($Y$) on carbohydrate intakes ($X$) was:

\[
\text{Blood glucose change (mg/dl)} = -77.6 + 1.1 \times (\text{carbohydrate intake (g)})
\]

with a 95% CI for the slope of the regression line being [0.78; 1.45] ($P < 0.001$).

By using the quadratic equations of carbohydrate intake, we computed a table of interpolation and so for carbohydrate intake on board between 15 g and 155 g, we can predict the value of any blood glucose change and his 95% CI corresponding to any value of carbohydrate intake. For example, the model predicts that a -50 mg/dl change in blood glucose is related to a 25 g carbohydrate intake, and this change in blood glucose belongs in 95% of cases to an interval of [-67.8; 31.5] for mean value of changes, and [-137.6; +38] for an individual value (Fig 1). For the 44 dives without carbohydrate intake on board (due to adequate blood glucose levels between 160 and 250 mg/dl (8.80-13.75 mmol/l)), blood glucose decreased during 39 dives (by more than 50 mg/dl (2.75 mmol/l) in 21 cases and more than 100 mg/dl (0.55 mmol/l in 6 cases) and increased during the 5 other dives (Fig 2).

**CGMS data**

Glucose variations recorded in one patient were wide during the day but not during immersion. On the second day of recording, the patient had reduced his insulin doses by 13% and had taken 75 g carbohydrates on board before the afternoon dive. Glucose levels were 190 mg/dl and 210 mg/dl (10.45 and 11.55 mmol/l) just before the morning and afternoon dives, respectively. Glucose decreased after the 2 dives (morning, afternoon) staying below 80 mg/dl (4.40 mmol/l) during one hour (Fig 3).

**Air consumption during the dives**

The average air consumption of the diabetic patients was 10% higher in means compared to the other members of their diving crew (data not shown). This moderate excess in consumption is usual for beginners and is most likely related to stress.

**Energy and carbohydrate intakes**

The daily calorie intake off the boat was on average $3226 \pm 572$ kcal with an appropriate amount of carbohydrates ($48.5 \pm 4.4 \%$ of the total energy intake).
Carbohydrates taken on board were in a range of 15 g to 435 g (mean 202 g) cumulate for the eight dives. There was no correlation between this amount and the daily energy intake, body mass index, HbA1c, diabetes duration and initial insulin dose. The total carbohydrates intake on board for the 8 dives correlated (P < 0.001) with the decrease in insulin doses on the fourth day as compared with the doses before the first dive (Fig 4).

Changes in insulin doses

 Compared to the initial doses before the dives, the overall insulin dose was slightly reduced on the first day (-5.3% in means). On the fourth day it was more markedly reduced (-19.3% in means; more than 20% for 7 patients) including a mean reduction by 26% of the boluses and 12.3% of the long acting insulin doses.

Body composition

Body weight remained stable and body compartments did not change significantly during the trip (data not shown).

Discussion

In France, the FFESSM medical contraindication for scuba diving has become a well-established rule, in existence since the heighties, following the death of a diabetic diver. But this diver had a patent foramen ovale, and the relationship between his death and diabetes has never been proved [6, 11]. This ban was declared at a time when diabetic treatments and diving equipment did not encourage diabetic subjects to dive. Since then, the ban has never been reconsidered whereas there have been considerable new developments both in the fields of diabetes and of scuba diving. Insulin analogs have made it possible a reduction of hypoglycemia and to practice sports and physical activities more easily [12]. The generalization of stabilizing jackets and diving computers in scuba diving, the technical improvements, reduction in costs and the multiplication of diving clubs have opened up this activity, reserved in the past to an elite, to a greater number of people. The concept of scuba diving as a recreational activity is now well developed. In addition, nine out of ten dives in the world today are done at a depth lower than 30 meters. Accidents occurring because of diabetes have not been reported, nor has it been declared that diabetic subjects get the bends more frequently than other divers or have more micro or macroangiopathic complications than non diver diabetic patients.

We followed glucose profile, changes in insulin doses and daily energy intake, particularly carbohydrates, during 4 days with 8 dives, in well-controlled and well-educated type 1 diabetic patients without complication who were willing to dive under strict medical monitoring. Eight of the 15 patients were beginners in scuba diving. Our main observations were that with a strict protocol to prevent hypoglycemia the diabetic divers did not, at any time, feel to be in danger; no hypoglycaemia occurred, mean blood glucose before immersion was 200 mg/dl (11 mmol/l) and decreased of 40 mg/dl (2.2 mmol/l) in means, insulin doses needed to be reduced up to an average of 19% on the fourth day, and food intake was mark-
Type 1 diabetic patients during scuba diving

Figure 3
CGMS recording during the second day of dives. The patient dove at 09:00 am and 03:55 pm, for 40 minutes in both cases.

Part A: overall recording. Subcutaneous glucose levels decreased after the morning dive, before lunch, and in the evening.

Part B: CGMS recording during the 40 minutes of diving (afternoon dive).

Figure 4
Correlation between total carbohydrate intake on board for the eight dives and the maximal reduction (%) in insulin doses on the fourth day as compared to doses the day before the first dive in the 15 patients ($R^2 = 0.80; p < 0.001$).
ingly increased. Furthermore, for the first time, a continuous glucose monitoring was performed using a CGMS device placed in a watertight casing, and showed a slight glycemia decrease during diving and a marked decrease after diving. Since the CGMS device was placed in a watertight casing, it was always at atmospheric pressure. This makes its results likely to be unaltered, by hyperbaric conditions but needs to be addressed by a specific study.

Some other studies have investigated glucose excursions in diabetics during diving [2, 5, 9] or hyperbaric casing and have reported similar results. Lerch et al. [2] have reported a mean decrease in blood glucose of 50 mg/dl (2.75 mmol/l) with high intersubject variability. Edge et al. [13] conducted a study in eight insulin requiring patients to evaluate plasma glucose response to a simulated 20 minutes dive to 27 m in a hyperbaric chamber, including 16 minutes of exercise (6 minutes vigorous) on a cycle ergometer. With a control group at sea level, they proved the lack of effect of the hyperbaric conditions on plasma glucose response to exercise.

G. Dear et al. [5] with the DAN diabetes and diving project, have collected 555 dives in warm sea, at a mean depth of 20 m, performed by 40 type 1 diabetic patients aged an average of 44 years. They reported a mean blood glucose decrease of 54 mg/dl (2.97 mmol/l) and no hypoglycemia during immersion. In this important retrospective study, divers managed themselves their carbohydrate intake before immersion according to guidelines very similar to ours.

We observed an important cataglycemia when there was no carbohydrate intake on board, and even in those who took carbohydrates on board before immersion, blood glucose decreased during most of the dives. Based on the algorithm, we can predict that in more than 95% of the cases, a carbohydrate intake of 25 grams will protect blood glucose levels from decreasing more than 50 mg/dl (Fig 1). Such an intake associated with a 200 mg/dl (11 mmol/l) blood glucose target before diving will protect the diabetic diver from hypoglycemia. This algorithm should be validated by further investigations. The correlation between total carbohydrates taken on board for the eight dives and the maximal decrease in insulin doses on the fourth day (Fig 4) strongly suggests that insulin doses in our patients were undoubtedly not reduced quickly enough. This explains the occasionally large amounts of sugar taken preventively in order to comply with the immersion protocol.

Diving into water at temperatures of 12°C to 24°C must be considered to be a physical activity of medium intensity (like competitive swimming), even if the physical effort in itself is not very important. The French speaking society of diabetology (ALFEDIAM) recommends reducing basal insulin from 10 to 20% when practicing a high workload sport (> 75% maximal theoretical heart rate) [12]. This reduction does not seem sufficient to ensure security for scuba diving. The case of scuba diving is different in that the effort cannot be stopped and some glucose cannot be taken as quickly as in other sports. Daily energy intake was considerable (3 226 Kcal on average). This was mainly due to the increase in energy expenditure related to the cold, especially due to immersion and also to some stress as suggested by the excess in air consumption during the dives (10% more in diabetics than in the non diabetic crew).

Thermal neutrality of the bare body exposed to air is between 24°C and 25°C while it rises 33°C underwater [14]. It is therefore important not to have a normal or hypocaloric diet during a diving trip. We recommend 3 000 to 3 500 Kcal per day and appropriate parts for the three main nutriments, bread and starches being necessary at each meal. The present observation justifies a diving restriction in cold water for the diabetic subject. The wet suit must be adapted to the water temperature. Wearing a hood is necessary because the medulla region is particularly sensitive to drops in temperature.

We consider that “ideal glycemic” goal before immersion should be between 200 and 250 mg/dl (11-13.75 mmol/l). We therefore recommend lowering the long acting insulin dose by 30% on the night before the dive and the long acting plus regular insulin by 30% on the day of the dive, and also taking carbohydrates on board in any case, as claimed by DAN and BSAC guidance [5, 6].

We used the immersion protocol already recommended by which DAN and the BSAC [2, 5, 6], based on capillary blood glucose before diving and carbohydrate intake. These uneventful experiences, together with numerous other cases of diabetics diving safely, lead us to propose to change the FFESSM recommendations concerning insulin-treated diabetes. Our proposals (Appendix) are close to present DAN recommendations. The differences, due to specificity of the French diving are: maximum depth of twenty meters, a water temperature above 14°C, a diving duration not exceeding 30 minutes, and a specific hand signal for hypoglycaemia, plus mandatory guidance by a diving instructor. Furthermore, as the degenerative complications of diabetes are contraindications to diving, they need to be included during the screening process of the diabetic patient willing to dive (Appendix 1b). These propositions for restricted qualification requirements have very recently been agreed upon (October 17th, 2004) by the directory committee of the FFESSM. These restrictions might be reconsidered after a trial period of three years.

In conclusion, this study which is the first official one ever performed in France shows that in strict security conditions, insulin treated diabetic patients without complications, with a good glycemic control and well aware of their disease may dive securely in the median space (20 m) during 30 minutes. Other studies using continuous glucose monitoring would be helpful to validate our protocol proposals (Appendix). If div-
Proposition de qualification requirements and immersion protocol for recreational scuba diving for insulin-treated diabetic patients.

1 — Global procedure
A medical release form of non-contraindication could be delivered to an insulin-treated diabetic subject according to the following procedure:
- Initial medical certificate signed by the diabetologist
- Final medical certificate of non-contraindication signed by a federal FFESSM physician.
- This certificate of no contraindication will allow diving in clubs affiliated to the FFESSM, according to the restrictions shown below.

The diabetologist will be informed of the conditions required to release a medical certificate:
- Age > 18 years and patient regularly followed
- Diabetes with no micro or macroangiopathic complications
- HbA1c < 8.5%
- Good perception of hypoglycemia and no severe hypoglycemia during a year.
- Good knowledge of diabetic disease and management of insulin doses and food intake during sport.

This procedure is simple and does not need the diabetologist to have a special interest in scuba diving, nor the federal physician to be competent in diabetology.

2 — Restrictive qualification requirements
Dives within the “safety curve” (no decompression curve)
- in the 6-20 meter range (“median space”)
- accompanied by a level 4 diver or an MF1 instructor
- water temperature > 14°C
- duration < 30 minutes

3 — Immersion protocol
Capillary blood glucose to be measured 60, 30 and 15 minutes before the setting with water.

Protocol proposed according to capillary blood glucose before diving

<table>
<thead>
<tr>
<th>Time before diving</th>
<th>160-200 mg/dl</th>
<th>&gt; 200 mg/dl</th>
<th>&gt; 300 mg/dl</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 min</td>
<td>30 g carbohydrates</td>
<td>15 g carbohydrates</td>
<td>Wait for a control 30 min later</td>
</tr>
<tr>
<td>30 min</td>
<td>30 g carbohydrates</td>
<td>15 g carbohydrates</td>
<td>Wait for a control 15 min later</td>
</tr>
<tr>
<td>15 min</td>
<td>Cancel the dive</td>
<td>15 g carbohydrates and diving allowed</td>
<td></td>
</tr>
</tbody>
</table>

References